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Original Communications.

ARTICLE 1. — *Intraocular Ossification.* By F. B. NORCOM, M.D., Chicago.

Miss McC——; aged 23 years; nervo-sanguine temperament; of handsome, ruddy complexion, and fair physical development, showing the possession of exuberant health and sound constitution, though born, and, as we say hereabouts, "raised" in the State of Michigan (q. s.)

When about three years of age, was accidentally injured by a fragment from the stalk of a sunflower plant (*Helianthus annuus*), which was being used by her mother as a stimulant to the cutaneous surface, and to the soft, safe protuberances of a refractory brother, who, with an agility peculiar to youths under such circumstances, and with a natural disrelish for such applications, was ingeniously engaged in eluding and dodging the "raining blows," and with such benefit to himself, that, a neighboring table catching a spiteful stroke, a shower of splinters was sent in every direction, one of which perforated the cornea, and in all probability the capsule (and its lens), with partial dislocation from its normal attachments.

The entire foreign substance was removed very soon after the accident, and in a few hours violent local inflammatory action lighted up. Physicians were called in, but her fright and resistance were so urgent that, they could not draw the lids apart, and, as anæsthetics were not much in vogue at that period in the far West, nor their physiological action well understood, no further attempts were made at an examination, but the case was conducted upon general principles, and with such success that the entire cornea sloughed in three weeks, and the globe gradually emptied itself. The pain and suffering then began to abate, nor did the sound eye ever offer the slightest sympathetic disturbance.

In her seventeenth year she applied to Dr. J. B. Walker, an eminent ophthalmist of this city, for an artificial covering, though experiencing not the slightest subjective uneasiness in the stump, and this being nicely adapted, she returned home, well pleased with her improved appearance, and with full directions as to its removal and general management. This shell she wore pretty steadily for two and a half years, a period entirely too long, and with the usual result of an eroded and roughened surface, creating irritation, and finally inflammation of the palpebral conjunctiva, leading to a condition of fibro-sarcomatous granulation. As her stay in the city would be very limited, measures were immediately instituted to restrain inflammatory action and smooth down the granulations, at same time another shell inserted, and strict injunctions as to the treatment upon her return home. After this time, she paid several more visits to her surgeon, and always with the exchange of a new artificial eye, though the lid had not entirely regained its normal condition, nor become entirely free from slight bastard relapses. The first week in June she returned, having worn the last shell eighteen months, which, upon examination, was seen to have lost its glossy and smooth surface, and also with the addition to her troubles of intraocular irritation, and an enhanced crop of distended capillary loops of the upper lid, which were becoming daily more and more fibrous in character.

Her surgeon, feeling that the symptoms indicated a low grade of inflammation going on in the internal eye, and that its companion must soon take on symmetrical disease, and at the same time to facilitate his treatment of the lids, very properly advised extirpation, which was accordingly performed on the 9th of June.

The globe was reduced one-half its natural size, hard upon pressure, especially antero-posteriorly, the cornea gone, and its site occupied by a not very dense, translucent plate of fibro-plastic cicatricial tissue. It was partially opened by Dr. N. S. Barnes, who was present at the operation, and found to contain no fluid, but a hard substance occupying the hyaloid cavity. I had the honor to receive the specimen from the operating surgeon, Dr. Walker, with a request to examine it pathologically; and as it appeared to present rather a peculiar ossification of the internal structures, I have taken the liberty of making these few notes for the benefit of those fond of such investigations, especially for those studying ophthalmic surgery.

The incision was lengthened carefully, and the bulb well laid open. Size, one-half; cornea entirely disappeared, its place taken by the tissue above described; a few shrunken shreds of iris; sclerotic shriveled, but natural in structure; ciliary body gone, and ciliary ligament atrophic; choroid coat likewise, with, however, a light pigmentary layer; and the cavity occupied by an irregular osseous mass, composed of an anterior and posterior ovoid disk, joined by a delicate laminated column of bone. The posterior plate measures four lines in its transverse, and three and a half in its conjugage diameter; one line in thickness, gradually increasing to two at its junction with the column; begins at the entrance of the optic nerve, without any marked deficiency, and runs outwardly; is dense and serrated, and composed of bone structure chemically and anatomically. The column is one-half line in thickness, one in breadth, and three and a half in length, that is, from disk to disk; and is without question the coarcted and folded retina in a state of calcareous degeneration. The anterior disk is the shrunken capsule—the lens having been absorbed; concavo-convex, the convexity looking forward; fringed at its edge; fragile; cribriform; two and a half lines in its transverse, and two in its conjugate diameter; and is a perfect cretaceous transformation, effervescing with acids.

The weight of the entire body is 3½ grains; its posterior plate was adherent to the choroid, and, upon being detached, presented a quantity of pigmentary granules upon its under surface. A microscopical examination revealed laminated bone structure with imperfectly developed lacunæ and canaliculi, but no well-

marked traces of Haversian canals, and no evidence of vascular endowment; though it must be confessed that, in subtracting a few particles for examination, I did it sparingly, for fear of injuring and defacing the beauty of the specimen. And as it lies now before me, so unique and instructive, I cannot refrain from making some few remarks, and mayhap indulging in some wayward speculations, for all of which I trust the reader will forgive me.

Lawson, in his admirable and practical treatise on "Injuries of the Eye, Orbit, and Eyelids," tells us, "that an eye which ceases to perform its function (ceases to see), whether from injury or disease, must in the course of time undergo disorganization, that is, become atrophic and degenerated, and the only exceptions are those whose corneas have been destroyed, as, for example, in purulent ophthalmias, without implicating the internal structures. Such eyes, of course, shrink from disuse, and remain quiet, seldom troubling their owners; but in those organs where the deeper-seated tissues are engaged, processes of change and degeneration ensue, the parts within waste more rapidly than the tunics of the globe, by shrinking, can accommodate themselves to, and the relative connection of the internal structures thus becomes disturbed." "From atrophy of the vitreous body, and diminished bulk, the retina, losing its support, falls forward separated from the choroid, and the intervening space becomes filled with an adventitious deposit, capable of being organized and developed into bone; while the retina becomes coarcted and folded upon itself like a cord," its properties as a vitalized tissue being completely lost. Every texture of the eye may be the seat of ossification, the result of changes induced by long-standing inflammation, and almost always of a traumatic nature, and all such changes begin with the vascular portions—as the ciliary body and the choroid coat—by effusions of plastic material, changing to fibrous tissue, next granular osseous deposits, and lastly bone structure.

Though it has been doubted by some, as to whether these calculous depositions possess the properties of bone, as vitalized and independent organizations, yet the researches of Hulke, Virchow, Stellwag and others, prove conclusively that they are moderately gifted with vascular canals, lacunæ, and canaliculi,

and hence must perform certain and vital functions, otherwise it might be difficult to account for their growth and the superposition of various laminæ. Virchow evidently takes this view in his work on "Morbid Tumors," as quoted in the July number (1870) of *The American Journal of Medical Sciences*, where two interesting cases of bony deposit within the eye are introduced, by Dr. Harlan, to the March meeting of the Pathological Society, and a careful microscopical examination of both specimens by Dr. W. W. Keen. Stellwag says, too, "The ossification of these new formations begins from the external layers, while new connective tissue layers are placed on the inner surface."

Very few of the writers believe that the retina ever takes on this species of degeneration. Mackenzie doubts it, following, however, the doctrine of Panizza, who, from his dissection of a case, quoted in that learned author's work, page 649, merely considers such appearances of the hyaloid membrane and retina as calcareous incrustations deposited by the condensation of extravasated fluids; while Virchow, as above noticed, believes that the osteomata are small flat bones, developed on the internal vascular tunic, always the result of chronic choroiditis, and have been mistaken for ossifications of the retina. Stellwag, on the other hand, says, "that if any part of the retina remains in contact with the bony plates, it may also become bony." With this specimen in my hand, and from a careful examination of its position and peculiar laminated appearance, I cannot doubt but that the stem, joining the disks, is the retina transformed into bone, not by incrustations deposited upon it as a *point d'appui*, but by the same right, and in the same manner, as other vitalized tissues have to take on such changes; nor does the fact of its degenerated condition, with all its vessels atrophied, and separated from its choroid, materially alter the question in any respect, as it is by no means necessary in such calcareous degenerations that the substances have an independent vascular system, or have connection with parts so endowed (Rokitausky), and a very good illustration is furnished in the case of free bodies undergoing such transformations enclosed in serous sacks or cavities. Happy examples of changes from fibrous to osseous material will be seen in the formation of phlebolithes from clots of blood; of branching and irregular pieces of bonelike matter found in obliterated

veins; and, lastly, of mortar grains in the fibrous deposits on the heart's valves (Paget).

In these remarks I have only touched lightly and incidentally the several points of interest; first, the conversion of bone from ordinary inflammatory exudations, and the various processes of change; second, the ossification of the retina, for in this case no other portion of the internal eye could have furnished the connecting column; and, lastly, ossific degeneration of substances without vascular supply of their own, or dependence on other structures so supplied.

ARTICLE II.—*Report of Three Cases of Vesico-Vaginal Fistula.*
By A. REEVES JACKSON, M.D., Chicago, Ill.

CASE 1. *Vesico-Vaginal Fistula—Operation—Cure.*

Mrs. G., the wife of a farmer, was delivered, at the age of thirty-seven years, of her first child, after a labor of twenty-four hours, without instrumental aid. The child was still-born. Four years afterwards she again became pregnant, and, on the 20th of March, 1859, after being in labor thirty-six hours, was delivered, with the aid of forceps, of a second still-born child, at full term. About the fifth or sixth day she observed that she had no longer power to retain urine, except in very small quantities, and only in certain positions of the body.

An examination made some months subsequently revealed a fistulous opening of an ovoidal shape, three-quarters of an inch long, connecting the vagina with the bas-fond of the bladder.

As the patient had a great dread of a cutting operation, an attempt was made to close the fistula by repeated applications of nitrate of silver. This having proved entirely unavailing, and the condition of the patient being truly deplorable, she at length consented to undergo any operative proceeding that offered a fair prospect of success.

There were two points of difficulty in the case, either of which might militate against the success of an operation. One was a very contracted vagina, and the other an exceedingly sensitive

condition of the urethra. This latter was so great, indeed, that the attempt to introduce a catheter produced the most excruciating pain. By using the instrument daily, however, the sensibility of the part became lessened, so that she was able to permit its presence during gradually lengthening periods, until finally it gave no uneasiness whatever, and for a few days immediately preceding the operation, she allowed it to remain four or five hours daily. The constriction of the vagina was removed in some degree by the use, two or three times a week, of an expanding speculum, by means of which the parts were put upon the stretch half an hour at a time. A series of sponge tents of suitable size would doubtless have been more efficient, but for some unaccountable reason she objected to their employment.

I also instructed the patient in the manner of introducing and removing the catheter herself, and this I regard as a very important part of the treatment, for in most cases it seems necessary to the success of the operation for vesico-vaginal fistula that the catheter remain constantly in the bladder, in order to carry away the urine so soon as it reaches that organ, and thus prevent any possible accumulation from endangering the newly-formed adhesions. And although the sigmoid catheter is a self-retaining instrument, yet it may and not unfrequently does slip from the bladder. Such an accident may occur during sleep, from an involuntary muscular effort; or the instrument may become entangled in the bedclothing, or in a variety of other ways it may be withdrawn, and if the patient be unable to replace it, and the medical attendant not near at hand, this circumstance alone may be sufficient to prevent success. Hence the importance of the patient being able to perform this operation without assistance, and likewise of realizing the necessity for having the catheter in the bladder during the entire progress of the after-treatment.

Operation.—The patient having the day before taken a full dose of castor oil, the operation was performed on the 12th of September, 1860, in the presence and with the assistance of Drs. Grattan, Bond and Bush, and Mr. Horace De Young, medical student. She was placed upon a table in the knee-elbow position, the pelvis being supported by a low stool covered with a pillow. By means of a Sims' speculum, the fistula was brought into tolerably good view, although, from the narrowness of the

vagina, this was not easily done. The day, too, was unfortunately a cloudy one, a circumstance which added greatly to the difficulties of the operation, for I know of none in which a bright sunlight is more desirable than this.

However, the edges of the fistula were at length satisfactorily pared, a complete circlet being removed, having its edge strongly beveled at the expense of the vaginal mucous membrane and subjacent tissue. The instruments used in this stage of the operation were a long-handled tenaculum and a straight knife.

The patient was now released from her uncomfortable position, and allowed to rest until all bleeding from the cut surfaces should cease, and, in the meantime, I made preparations for the second stage of the operation.

Having the patient again placed in position, and the parts exposed, I introduced six metallic sutures, three of silver and three of iron wire, the points of insertion and emergence being each about half an inch from the edges of the opening. The ends of each pair being drawn tense, sufficient twist was given to them to approximate and maintain the edges of the fistula in close contact. A fenestrated leaden plate or button was then passed down to the wound, the six pairs of wires passing through the fenestrum. This latter was beveled on the side applied to the line of incision, which, since the tightening of the sutures, was perfectly straight. The plate was secured in its position by means of perforated cylinders of lead, one of which was passed respectively on each pair of wires, and having been pressed firmly against the plate while the wires were tightly drawn, they were firmly squeezed between the jaws of strong forceps. The wires were then cut off close to the cylinders, and the operation was finished.

A sigmoid catheter was introduced, and a full dose of McMunn's elixir of opium administered.

After-treatment.—Every morning and evening the patient took a full dose of opium, for the double purpose of preventing irritability and of constipating the bowels. This latter object was also aided by a diet consisting exclusively of crackers and tea. The catheter was removed daily for cleansing, and another inserted. At no time, however, did any troublesome incrustation form upon the instrument. The urine was received in a vessel placed under the catheter for the purpose. The vulva was carefully syringed three times a day with tepid water.

On the third day after the operation I examined the parts, and had the satisfaction of finding them in a most favorable condition. The button was firmly in its place, and no urine was perceptible in the vagina. On the tenth day I removed the button without difficulty, and found beneath it a firm, hard cicatrix, extending the entire length of the former fistula. The sutures were permitted to remain two days longer, at the end of which time they also were removed.

During the night of the twentieth day after the operation, and while the patient was sleeping, the catheter accidentally slipped from the urethra. She awoke with a strong inclination to pass water, and made the effort, when, to her inexpressible delight, she discovered that for the first time in eighteen months she had power to evacuate the bladder at will. She at once replaced the catheter, however, and continued to use it the next three or four days, allowing it to remain out of the bladder an hour the first day, two hours the second, and so on until she felt safe in dispensing with its use entirely.

CASE 2. *Vesico-Vaginal Fistula—Operation—After-treatment, complicated with vesical hæmorrhage—Cure.*

Mrs. Moore, the wife of an Irish laborer, aged thirty-four years, is the mother of four children. At the age of nineteen she gave birth to her first child, after a labor of eight days' (?) duration. No instruments were used. On the ninth day after her confinement she noticed the urine dribbling from her, and it has continued to do so down to the present time.

An examination, made June 1st, 1863, revealed a large fistula, irregularly elliptical in shape, with red thickened edges. It extended from about the middle of the vagina to the upper boundary of the anterior cul-de-sac. The cervix uteri pressed through the opening into the bladder. Her condition being one of uninterrupted misery, she gladly consented to an operation that promised any measure of relief.

Operation.—The patient having been suitably prepared, the operation was performed June 11, 1863. I had the assistance of Drs. Bond, Bush and Osmun. There were also present, Messrs. Boys, Williams and Gulick, medical students. Having placed

her upon the elbows and knees, with the back towards a window, the vagina and fistula were exposed by means of a Sims' speculum. The cervix uteri was drawn away from the opening by means of a tenaculum, held by an assistant. The edges of the fistula were carefully pared, and brought together with eight silver wire sutures, each alternate one being clamped with perforated pieces of lead, and the others simply twisted. Previous to clamping the sutures, a fenestrated plate of lead was passed over the suture wires, as in the case of Mrs. G. A full dose of elixir of opium was given, the patient placed in bed, and a sigmoid catheter introduced.

Progress of Cure.—June 12th, 9 A.M. Patient did not sleep last night, but feels comfortable. The urine is scanty and bloody. It all passes into a vessel placed beneath the catheter. Syringe the vulva and vagina with cold water. Order crackers and tea exclusively as diet. Give a teaspoonful of elixir of opium.

9 P.M. The patient is very restless. Blood has been flowing all day, clogging the instrument, and necessitating its frequent removal. She complains of abdominal pain, and a constant desire to urinate. Remove the catheter, cleanse and replace it. Repeat opium.

13th, 9 A.M. Rested well last night, and is still drowsy. Pulse 104, soft and full. Syringe the vagina and vulva with cold water. Remove the catheter, and free it from clotted blood. The urine continues scanty and bloody. She is permitted to lie on her side.

7 P.M. Patient very uncomfortable, and complaining of an intense desire to urinate. No urine has flowed through the catheter for more than an hour. Remove the instrument, which is filled with a blood clot. A great deal of blood has been passing during the afternoon. Cleanse the instrument and replace it, giving exit to about two ounces of bloody urine, with great relief to the patient. The bleeding continues so profusely that it is found necessary to remove the catheter every few minutes. Accordingly I detail Messrs. Boys and Williams to remain with her during the night. At 10 P.M. I administer a full dose of opium, and enjoin the recumbent posture and strict quietude.

June 14th, 4 A.M. Am called in haste. The patient is in great pain from flatulent distension of the bowels. The catheter

has been removed and cleansed every fifteen or twenty minutes during the night, on account of the continuous flow of blood. Pulse 100, skin cool, some thirst. Syringe the vagina with cold water, and order three grains of gallic acid to be given every two hours. Also give one-quarter grain of morph. sulph. Shortly after taking this latter she passed a large quantity of flatus from the bowels, and at once became easier.

10 A.M. Has taken two doses of the gallic acid. Bleeding from bladder much diminished. Has slept during the last four hours. Remove the catheter and cleanse it.

5 P.M. Feels very comfortable. Bleeding still less. Pulse 94. Cleanse and replace the catheter.

June 15th. Am called at 3½ A.M. The patient awoke with much pain, and withdrew the catheter herself. It was filled with clotted blood. She complains of great pain. The urinal contains a considerable quantity of bloody urine, and a heavy clot is in the bottom of the vessel. Introduce the catheter, and remove an ounce and a half of urine tinged with blood, giving great relief to the patient. Syringe the vagina with cold water, repeat the gallic acid, and enjoin strict rest.

10 A.M. She has taken the gallic acid every two hours. The bleeding continues. Once, on removing the catheter, a number of clots are forced from the urethra, sufficient to form a mass as large as a walnut.

1 P.M. She seems much better. The urine now flows through the catheter almost free from blood. Continue gallic acid.

8 P.M. Patient in good condition. Urine flowing nearly clear. Continue gallic acid, and give a quarter grain of morph. sulph.

12 Midnight. Patient quite comfortable. Leave her in charge of Mr. Boys.

June 16th, 8 A.M. She has passed a good night. Urine free from blood. Syringe the vagina. Change clothing and bedding.

8 P.M. Urine has continued to flow through the catheter, with only a tinge of blood. Repeat morphia.

11 P.M. Change catheter. Notice a very slight trace of blood in the urine.

June 17th, 8 A.M. Has slept well during the night. Urine has flowed freely, but still contains a small quantity of blood. Syringe vagina. Repeat morphia.

10 P.M. Has slept nearly all day. Change catheter.

June 18th, 8 A.M. Syringe vagina and change catheter. Repeat morphia.

From this time forward the patient felt comfortable, except from occasional pain caused by flatulence. A slight trace of blood continued in the urine, but was not sufficient in amount to clog the catheter.

June 22d. This morning, with the assistance of Messrs. Boys and Williams, I remove the plate and all the sutures except two. The parts appear well, and union perfect. Introduce catheter and remove a half ounce of urine, which has accumulated during the removal of the button.

June 23d. To-day she feels entirely well, and thinks she could walk home (a distance of eighteen miles).

June 24th. Examine the parts and remove the remaining sutures. Notice a small spot of ulceration at the site of one of the sutures. Touch it with nitrate of silver.

June 27th. Patient steadily improving. She sits up to-day an hour and a half without the catheter. Towards evening it is again removed two and a half hours.

June 28th. Bowels moved this morning spontaneously, the first time since the operation—a period of seventeen days. Remove the catheter four hours, and then allow the patient to urinate without assistance.

July 1st. She starts for her home perfectly well.

(She has since given birth to two children; one on Sept. 5th, 1864, and the second in 1867, both labors being natural, and not followed by any injury to the vagina.)

CASE 3. *Vesico-Vaginal Fistula, of 28 years' duration—Operation unsuccessful—A second operation also unsuccessful.*

Mrs. W., aged sixty-eight years, has been afflicted with vesico-vaginal fistula twenty-eight years. She has had eight children, and the accident occurred during her last confinement. The labor was a lingering one, and was completed at the end of three days by instruments. She attributes her misfortune to the improper use of forceps, and says that at the time of their application she felt something "pinching" her.

Her general health was good, and she submitted to operation November 10th, 1863. There were present Drs. Thomas Bond, of Hainesburg, N. J., and P. M. Bush, of Marshall's Falls, Pa., together with some of the female relatives of the patient.

The fistula, on being exposed, was found to be situated on the right side of the median line of the vagina, about eight lines in length, and four in breadth. It was deeply hidden in a sort of pouch caused by the surrounding hardened and elevated portions of the vaginal mucous membrane. The latter also presented some superficial ulcerations, one quite near the fistula. The uterus was prolapsed, and its cervix exhibited a small ulcer covered with an ash-colored slough.

Operation.—The edges of the fistula were pared by means of a straight knife, and then brought together and secured by seven silver wire sutures. The tubular needle with which I intended to introduce the sutures was unfortunately broken during the attempt to place the first stitch. Having no duplicate, I was obliged to use a curved needle, with a pair of ordinary tonsil forceps, which made the operation both tedious and difficult. I employed neither button nor shot. The wires were simply twisted, and cut off close to the line of incision.

At the conclusion of the operation, which lasted one hour and forty minutes, I gave a teaspoonful of McMunn's elixir of opium, had the patient placed in bed, and introduced a sigmoid catheter.

Progress of treatment.—10 P.M. She complains of some pain, and has a desire to urinate. Change the catheter and repeat the opium. The diet to consist exclusively of crackers and tea.

Nov. 11th, 9 A.M. Slept some during the night, and this morning feels comfortable. Change catheter, and syringe the vagina with cold water. Repeat opium.

9 P.M. Change catheter and repeat opium.

Nov. 12th, 9 A.M. Slept well all night. Change catheter, and find it a good deal incrusted with lime and clogged with mucus. Syringe vagina. The withdrawal and introduction of the catheter occasion much pain.

Nov. 18th. The vagina has been daily syringed with cold water, and the catheter changed twice daily. Since the operation I have observed that the cloths placed beneath the patient

are always wet, but the nurse has accounted for this by saying that the urine overflows or flows back from the urinal. Notwithstanding this explanation, I have had misgivings that the operation has failed, and that the cloths referred to have been made wet by the urine which escapes through the fistula.

Nov. 19th. Am pretty confident this morning that I discover urine escaping from the vagina, while the catheter is temporarily removed for cleansing.

Nov. 20th. This morning remove the sutures, and discover that union has not taken place, and that the operation has failed. The patient expresses a determination to have it repeated.

Dec. 11. To-day I operate again, with the assistance of Drs. Bond and Bush. The mode of proceeding is the same as that before adopted, except that I use the fenestrated plate for steadying the sutures. At the conclusion of the operation, the patient gets a full dose of opium, which is repeated once or twice daily. The diet consists entirely of crackers and tea. The vagina is daily washed with tepid or cold water, and the recumbent position strictly observed. The catheter is kept in the bladder, being removed once daily for the purpose of cleansing.

On the fifth day after the operation I am satisfied that urine escapes from the fistula, and that the operation has again failed. Next day remove the plate and sutures. The size of the fistula has diminished nearly one-half, but the patient has no more power to retain the urine than before.

785 Michigan Avenue.

ARTICLE III.—*Excisions of Head of Os Humeri for Gun Shot Wounds.* By CHARLES M. CLARK, M.D., Chicago.

(Continued from page 331.)

CASE III.

Nathan E. Davis, 2d Lieut., Co. F. 39th Ill. Vols., wounded October 13, 1864, by rifle ball, which entered at upper and outer third of right humerus, passing downwards and inwards, making its exit at the middle third of arm.

The bone was extensively comminuted, with a corresponding degree of mutilation to the soft tissues. He was placed upon the operating table, from the ambulance, immediately upon its arrival from the field, and chloroform administered.

The following operation was then performed; Longitudinal incision was commenced at the acromion and carried down on dorsum of arm, to the extent of seven inches, through to the bone, care being taken to leave as much of the periosteum as was valuable, when removing the fragments, which amounted to twenty-seven pieces in all. Provision was also made to isolate the circumflex nerve, which, in this particular case, was of enormous size.

After the removal of all the "debris" of bone, blood clots, etc., up to the capsule of the joint, it (the capsule) was divided and the head of bone removed, which was found fractured in its longitudinal diameter. Then section was made of the lower and remaining shaft at the point of perfect integrity, and after a thorough cleansing, the lips of the wound were brought together with the interrupted silk suture, and dressed with adhesive straps—compress of lint—splints and bandage, and the man carried to a bed.

The following morning he appeared cheerful and expressed himself as feeling very comfortable and greatly relieved, and could have slept some had it not been for the constant attention of the nurse in the application of cold water to the limb.

Reaction was fully established, and he called for his breakfast, which was eaten with relish.

The wound had bled some throughout the night, but had no depressing effect, and, in fact, was nothing more than is usual in this class of operations, from venous congestion and the oozing from so large a cavity as this was, there having been fully five inches of bone removed, including the "os humeri."

He was conveyed to general hospital at Fortress Monroe, by hospital transport, the following day.

In a few days the wound was attacked with hospital gangrene, (the great scourge in Chesapeake hospital at that time) and in a few days he died.

Previous to his wound, and at the time of being wounded, he was suffering with chronic diarrhœa, and had but lately returned

from a furlough given him on that account. His system was vitiated, and the vital powers much below a normal standard.

CASE IV.

Horace W. Stilwell, private, Co. B., 142d New York Vols., wounded, October 27, 1864, by conoidal bullet, which entered right shoulder anterior to head of bone, and passed obliquely downward and backward, lodging just underneath the skin at the middle third of the arm.

The bone was greatly shattered, and the capsule of the joint extensively lacerated, with free discharge of synovial fluid.

Chloroform was administered, and the head of bone, together with six inches of the shaft, removed, by an operation similar to the ones already described.

He rallied well from the operation, and on the following day was sent to general hospital at Fortress Monroe.

I have never learned the result of this case from any authentic source.

CASE V.

William Mahon, private, Co. —, 67th Ohio Vol. Infantry, wounded, June 2, 1864, by rifle ball, which entered the left shoulder, on its dorsal surface, passing transversely through the joint—splitting the head of bone and comminutely fracturing the neck and shaft, finally lodging just underneath the integument of inner surface of arm—or rather within the triangle of the axilla. The man was not brought from the field until nine o'clock P. M., and it was fully midnight before he was placed upon the table. Chloroform was given, and a full and free examination made by many of the surgeons attached to the operating staff. The decision arrived at was, that the operation for excision of the "os humeri" should be performed.

This was the first operation for excision of the shoulder joint, and, in fact, the first excision of any character in the hospitals of the Army of the James, and it was proceeded with under the most adverse circumstances, as far as light was concerned, for our supply of candles had given out, with the exception of one which was called into use at this time.

Dr. H. P. Babcock, U. S. N., then on shore, from the U. S. gunboat "Agawam," and who during the day had rendered valuable service, kindly assisted me in the operation, together with my usual table assistants.

The operation consisted in the same steps as heretofore described, and occupied fully an hour's time, by reason of the unfavorable conditions of insufficient light and inexperience with the operation, it being the first operation of the kind that I had attempted.

Great care was exercised in preserving the periosteum and in the dressing of the arm after the operation.

The following day he was placed on the hospital transport, "Hero of Jersey," and conveyed to Chesapeake hospital.

Six months afterwards, I was told by his regimental surgeon (Dr. James Westfall), that he made a good recovery—had been discharged from the service and was living at Toledo, Ohio, with a useful arm.

ARTICLE IV.—*Clinical Lectures on Diseases of the Ear.* By E. L. HOLMES, M.D., Professor of Ophthalmology and Otology in Rush Medical College, Surgeon to the Chicago Charitable Eye and Ear Infirmary.

(Continued from page 439.)

PHYSIOLOGY OF THE EAR—SOUND.

Gentlemen:

You are familiar with the fact that undulations of the air set in vibratory motion the membrana tympani. The vibrations of this membrane produce, through the ossicles, microscopic waves in the fluid of the labyrinth, which beat against the fibres of the auditory nerve, producing the sensation we call sound.

You have almost a perfect, though rough, illustration of the mechanism of hearing, if you place the tip of a small syringe filled with water, in a small glass of water, in which float coarse particles of some dark powder. Slight but rapid motions of the piston will cause delicate currents in the water rendered visible by the motions of the particles floating in it.

To comprehend, as far as possible, the wonderful delicacy of

the apparatus we have described, we must endeavor to conceive precisely what takes place in the ear, the ordinary medium of sonorous waves, when sound is produced.

A wave of sound, however originated, is a portion of the atmosphere in a state of condensation, followed by another portion in a state of rarefaction.

To picture in our minds these waves, which we cannot see, let us turn to a very familiar phenomenon.

A solid body dropped, for instance, into a placid sheet of water, causes waves to pass in circles from their origin to the shore. In this case a wave is that portion of water embraced in one elevation and one depression, its height and length depending on the size of the body producing it. This holds true in case of the mightiest billow of the ocean, or the tiniest ripple set in motion by the finest grain of sand.

You should bear in mind that atmospheric waves commence at a point and extend, not in circles as do the waves of fluids, but away from this point in spheres, consequently in whatever direction a person may be in reference to the origin of the sound, a portion of the sound wave must enter the ear.

When a series of waves in sufficiently rapid succession, whether caused by the vibration of a tuning fork, a stretched cord, or by any wind instrument, strikes against the membrana tympani, we have the sensation of a "tone;" the more numerous the vibrations, the higher the pitch of the tone.

The octave of any musical tone is produced when the number of vibrations causing the tone is doubled.

It is worthy of special remark that the human ear has no perception of a tone produced by vibrations exceeding about thirty-eight thousand in a second. Recur once more to the sheet of water I have already taken to illustrate, by its visible waves, the invisible waves in the air.

You have undoubtedly often observed that numerous small bodies dropped in regular and rapid succession into the water produced a series of small waves following each other in the same regular succession in which the bodies fell. You have also all observed on the surface of large waves smaller waves, and over these smaller waves ripples, all moving at the same instant. The eye is limited in its power of distinguishing the infinite gradations

in the series of waves which absolutely exist and roll, the smaller over the larger, when a very large series of bodies, varying in size, from that, for instance, of a large cannon ball to that of a grain of sand, fall within a few seconds into water.

Now picture in your minds, if possible, what occurs in the air during the performance of a piece of music by a large orchestra. The various bass tones reach the ear in waves measured in length by several feet — and varying in length according to their pitch; in these long waves also move the short waves produced by the instruments of a high pitch. All these waves, so infinite in number and various in length, not only enter the ear at the same instant with unvarying regularity, but do so even though they cross each other in every direction, as when we stand in the centre of a circle, the orchestra being arranged at the circumference.

It will assist us in comprehending these phenomena and their relation to the ear, by turning for a moment to some of the phenomena of light. As sound is produced by undulations in the air (usually), so light, as now generally believed, is caused by undulations in (a hypothetical) ether.

As light may be reflected concentrated by convex lenses or by concave mirrors, so sound may be concentrated by concave surfaces or by suitable lenses. You have seen the phenomenon of vision illustrated by the photographer's camera, on the ground glass screen of which the images of objects before it are formed.

You have repeatedly seen the experiment, in which the camera has been filled with smoke, when not only the image on the screen was seen, but also the cones of light, their bases and apices, being clearly visible. You have also seen how these cones may be lengthened or shortened, by concave or convex lenses, their form changed by cylindrical (astigmatic) lenses, and their direction modified by prisms placed before the object glass of the camera.

In this manner we have visible before us, in miniature, suspended in the smoke, the cones of light radiating from every object. In fact, the camera not only presents an image of all objects before it, but also, on a reduced scale and reversed, every pencil of light emitted from these objects.

I have digressed in this manner to impress, if possible, upon your minds just what occurs in the ear. If it were possible to

look into the labyrinth, and if the eye were sufficiently delicate, we should witness in the fluid of the labyrinth minute waves and ripples, which would be, as it were, reduced miniatures of every tremulous motion in the air, caused by the busy hum of human life, by the winds moving through the trees, by the fall of rain, the cry of animals, and notes of insects. All this infinitude of waves in the air finds each its individual counterpart accurately transferred to these few drops of fluid in the ear.

Thus far, in our studies of the anatomy and physiology of the ear, we have considered a few demonstrable facts. I will not lead you through the various theories which have been devised to explain the functions of different portions of the labyrinth and of the middle ear.

The theory of Helmholtz, however, regarding the cochlea is so beautiful, and supported by so many facts, that I cannot omit allusion to it here.

The portion of the auditory nerve distributed to the cochlea, is divided into a very large number of fine fibres, which may, not without propriety, be compared to the strings of a piano.

You are familiar with the fact that a musical tone, sounded either with the voice or some musical instrument over an open piano, causes the same tone to be repeated. Certain strings give this tone, while all the others are silent. Change the tone, the former strings will be silent, while others give the response.

In accordance with the theory of Helmholtz, low tones are distinguished by certain fibres alone, and high tones by other fibres of the cochlea nerve.

It is a curious pathological fact that there are patients to whom the lowest tones of the scale are absolutely inaudible, while all ordinary sounds and tones are accurately heard; other patients are totally deaf to the highest tones of the scale, because, according to this theory, the nervous fibres which distinguish the base or high tones are paralyzed.

From what has thus far been shown, you can appreciate to what extent sound is produced by mechanical means, and to what extent the auditory apparatus is strictly mechanical.

From this you will not be surprised to learn that deafness, in a very large proportion of cases, is produced by impaired motion of the stapes. Chronic inflammation of the middle ear causes

thickening of the membrane which surrounds the minute bones, which forms the "packing" of the stapes, which constitutes the membrane of the foramen rotundum, and of less importance, perhaps, the membrana tympani.

In fact, gentlemen, I do not think it is in any way unscientific to compare the ear, in a very great majority of cases of chronic inflammation, to a syringe in which the motions are obstructed or arrested by tightness around the handle, or by too close packing around the piston.

In our future lectures we shall confine our investigations to the answer of practical questions regarding the causes, diagnosis and treatment of the more common diseases of the ear.

ARTICLE V.—*Fracture of the Cranium.* By THEO. W. STULL, M.D., Marengo, Ill.

Seeing a case of fracture of the cranium reported not long since, reminded me of the following—to me—interesting case; and thinking, perhaps, that it might be interesting to others as well, is my reason for reporting it.

On the 11th of April, 1870, Dr. J. W. Green requested me to see a patient with him at his office. Said patient was a stout, healthy lad—Dennis S.—about 15 years of age, of whom the father gave the following history:

Ten days before, while leading a horse to water, he had been struck on the top of the head by a dull heel cork of the animal's fore foot, it rearing and striking in play. The lad fell partially down, but immediately recovered himself, pursued and caught the horse. During the following week he plowed considerably, and worked about as usual, without manifesting any particular symptoms of illness. One week from date of injury, he was attacked with spasmodic contractions of the muscles of the limbs of the right side, while at work. By a brisk friction of the muscles the spasmodic action was relieved, but a partial paralysis remained. The father now took the boy to Harvard, to his physician—who was then sick, and since dead—and, after describing the case to

him—the boy remaining out in the wagon—he was advised to take his son to Woodstock or Marengo, the doctor remarking that there was no one in Harvard who could do him any good. Not satisfied with this, the father took the boy to another physician, who claims to be a regular, and he examined the case, told the father to keep a plaster over the slight wound of the scalp, gave him a vial of medicine, and told him the lad would be well in a week. Two days later, the father, not satisfied with the boy's progress toward a convalescence, decided to bring the lad to Marengo, to Dr. Green, which he did on the 11th, a distance of fifteen miles, in a lumber wagon, and on a hot spring day. After a short examination, we informed the father that the skull was fractured, and that an operation was necessary. After informing him of the gravity of the case, we appointed the next day to go to the father's house and operate, which we did. The lad could still walk with a dragging movement of the right limb. The head was now closely shaven for some distance around the scalp wound, chloroform was administered to anæsthesiæ, and Dr. Green commenced the operation by making a V shaped incision, apex to the front through the skin and tissues, down to the cranium. The shape and size of the fracture of the outer table was of the shape and size of a well-worn heel cork, and was situated about 1¼ inches posterior to the coronal, and about half an inch to the left of the sagittal suture. The fracture of the inner table was in several pieces, and imbedded into the brain substance. The Doctor succeeded with but little difficulty in removing all the fragments, the aggregate of which formed a piece three-fourths of an inch wide and one inch in length. Brain matter escaped to the amount of the size of a large hazel nut. The hæmorrhage was quite profuse. After thoroughly cleansing the wound and staunching the blood, the wound was closed with adhesive straps, a cold water compress applied, and a continued use of the cold water dressing directed. The patient rallied well from the effects of the chloroform, and was placed in bed. A light diet was directed. The third day Dr. Green again visited this patient, and found him sitting up and able to walk about as he chose, the paralysis being gone. The Doctor now dismissed the case.

The last fall the father again visited our place. He informed

Dr. Green that the tenth day after the operation the boy went to plowing, and continued well through the season.

It is at least passing strange that the boy should receive so severe an injury of the skull without experiencing scarcely a noticeable shock from the concussion, and also that with this amount of injury to the brain matter, there should result so little inconvenience to the nervous system.

ARTICLE VI.—"*Formula, No.* 2." By H. W. RICHARDSON, M.D., Chicago, (formerly of Woodstock, Ill.)

I. S. Hawley, M.D., of Brooklyn, N. Y., in an article on "Pepsin and its Incompatibles," page 212, April No. of the Journal, takes occasion to state what no one will deny, that failures sometimes occur in administration of true and active medicinal pepsins. After enumerating some reasons for these failures, given by Chambers, he proceeds to illustrate other reasons by reference to formula written by me for the March No. of the Journal. He claims, I judge, as a matter of theory, without having tried it, that this formula fails, because the outgrowth of careless pharmacy, or utter disregard of the laws of Physiological Chemistry.

Without any disposition to occupy the space of the Journal or the time of its readers in an elaborate answer to Dr. H., we must say that we are amused at his conclusions—

1st. That "Whatever good this mixture may have done, is *not* attributable to its peptic action."

2d. That "Simple pepsin is capable of accomplishing *all* the indications here set forth."

If the Dr. can reconcile these two propositions with each other, we shall readily accord to him the honor of being ahead.

We admit freely, after submitting these matters to a practical test, that there may be conditions of the stomach requiring acids with pepsin, and other conditions requiring alkalies with pepsin, and others again where pepsin alone is *the* thing. We could give, however, were it necessary, numerous instances of marked

benefit, and some of almost miraculous relief and cure, from the exhibition of the exact formula given. And we are not making it too emphatic when we say we *know* that the alkali in the formula given does not destroy or neutralize the action of the pepsin. Please understand we are no sticklers for any one formula or set of formulas, and as a rule think that every man should formulate his prescriptions to suit the exigencies of each individual case.

Our reason for using the formulas in question has grown out of a recognition of, and firm belief in, the doctrine, that the condition met with as a rule in diarrhœa, is one of *inanition;* that unfortunate babies, starved by hand-feeding or by the imperfect condition of the mother's milk, attacked by diarrhœa, are not cured or benefited, but are slain by the thousands by the routine adherents of calomel, castor oil, rhei, etc.

We admit these agents may be necessary in some rare instances, but while, perhaps, they may make the stools less disagreeable for a time by throwing into the bowels a quantity of bile which prevents their decomposition, this is done at the expense of the poor child's body, and can but contribute to the debility, and hasten the destruction of the child. If we read the laws of physiology and pathology correctly, diarrhœa is that departure from a physiological condition which involves defective vitality of mucous membranes; defective absorbing power; suspension, either partial or complete, of the gastric function; possible congestion of the portal system; irritation of the stomach and intestines; and augmented exudation of fluids. Chambers teaches that not only these departures from health, but chorea, epilepsy, teething fits, convulsive apoplexy, delirium tremens, hysteria, and some forms of mania, are familiar instances of *diseased inanition*, and that the treatment should consist in the *replacing lost nervous power*, not of restraining its excess.

It seems to us then that cathartics should be used in diarrhœa only when the prima via needs unloading; that our aim should be to *control* diseased action—either by the use of formula No. 1 or its equivalent—and restore—either by formulas Nos. 2 and 3 or their equivalents—nutrition and health.

Selections.

The Mineral Springs of Michigan. Report of Committee to the Michigan State Medical Society.

The committee was composed of Dr. H. O. Hitchcock, of Kalamazoo, Dr. Kedzie, of Lansing, and Dr. Duffield, of Detroit.

The work had been subdivided and assigned in the following manner:

1. The geology and natural history of the mineral wells—Dr. Duffield.

2. The magnetic properties of the waters—Dr. Kedzie.

3. The actual therapeutic value of the springs as shown by the statistics of cases treated by the waters—Dr. Hitchcock.

Dr. Kedzie presented the report for himself and Dr. Hitchcock.

The investigations of Dr. Hitchcock showed that though many hundred patients had visited these springs, the number of cases in which the patients themselves had acknowledged benefit were too few to safely reason from. Dr. Hitchcock had prepared a careful and accurate report of these cases, from which it appeared that while some had been apparently made worse by the drinking of these waters, there was some reason to believe that some cases of neuralgia and paralysis had been benefited, but the query was propounded whether these and other diseases treated at these springs could not be as well treated by a judicious attention to diet and bathing at home.

Dr. Kedzie's report of his investigation as to the magnetic properties of the waters of these wells is an able and conclusive one.

He began by reviewing the history of magnetic wells in the State, and showed that since the first excitement which arose over the supposed discovery of such properties in the water of an artesian well in St. Louis, Gratiot county, these wells had multiplied until there was scarcely a town of any pretension in the State but possessed one or more of these wells. He says: "It becomes therefore a matter of some importance to thoroughly examine this question, for if, contrary to the generally received opinion of scientific men, water is susceptible of magnetic influence, becoming magnetic and imparting magnetic properties to other bodies—and if healing powers reside in the waters of our State arising from this magnetic property, it should be a matter

of State pride for our physicians to recognize and develop this new therapeutic agent, and bring it to the notice of the sick and the suffering. But if this magnetic property has no real existence in the water, and is only associated with it by some adventitious circumstances, then the sooner this fact is recognized the more will people be saved from loss and the sick from disappointment cruel as death." The doctor confines himself to the following two questions: "First, Do magnetic properties exist in these waters? Second, Do any healing powers which they may possess arise from this magnetic condition?"

He then reviewed the fanciful notions that had existed in explanation of these supposed properties of water, reviewed the researches of chemists in regard to the magnetic properties of water, among which the most important mentioned are the conclusions of Professors Graham and Faraday.

Since Graham had shown that metallic hydrogen is magnetic, and Faraday had brought to notice the magnetic qualities of oxygen, the question might arise "whether an oxide of hydrogen may not possess magnetic properties." This was rendered the more forcible by the fact that an oxide of iron ($Fe_3 O_4$), called loadstone, possessed this property in such a high degree.

An idea of this kind might have lead some scientific men to favor this notion. A sufficient reply to this is that monoxides do not possess magnetic properties "in any intensity, but only the union of the monoxide and sesquioxide, e. g., $Fe O + Fe_2 O_3 = Fe_3 O_4$, which has received the name of the magnetic oxide. Water is a monoxide, hydrogen forms no sesquioxide, and a mono-sesquioxide is, therefore, impossible."

He then further reviewed the experiments of Becquerel and others, which showed conclusively that water was not magnetic, and says, in comparison with these masterly investigations, "the experiments of individuals made here and there with apparatus obtained from the village blacksmith shop or drug store, made in complete ignorance of many of the laws of magnetic induction, sink into utter insignificance. But this is not the age of respect for authority, and the principles evolved by such masters in science as Michael Faraday 'pale their ineffectual fires' before the confident assertion of some rustic who has tried the experiment, and *knows* the water of his well is magnetic, and magnanimously pities the ignorance and conceit of scientific men who are disposed to accept the authority of Becquerel and Faraday, and doubt the assertion of the rustics."

The doctor then enumerated experiments of his own, showing that the water of these springs possesses no such magnetic properties; that the mistake had arisen from the magnetism possessed by the iron tubing of the well which resulted from its vertical position. He showed that the iron rod that had been supposed to

become magnetic by being placed vertically in a vessel of this water, would assume the magnetic property equally as quick if rain water, or *even no water* was used.

So far as he had been able to ascertain, the magnetic power manifested by these tubes in the so-called magnetic wells was proportional to the mass of iron, and varied with the depth and size of the pipe. It is manifested by the attempted artesian well in Charlotte, which has not reached flowing water, but is only a vertical iron tube sunk in the soil, yet it is magnetic just the same as the flowing wells.

The doctor met the assertion that bodies had been magnetized by the water of these wells when removed from these tubes, by experiments made by himself that proved to the contrary.

To illustrate the evidence upon which magnetic properties had been asserted to exist in the waters of these wells, he relates the following amusing incident: "I received, last year, a letter from an intelligent and enterprising editor in this State, saying that I had certainly fallen into error in asserting that the iron tube alone, and not the water, was magnetic. As a triumphant proof of my error, he inclosed a piece of knitting needle, which, before the experiment was made, had been tested and found to be possessed of no magnetic property, yet this needle had been so highly charged by holding it in the water, never coming in contact with the tube at all, that it would readily suspend a shingle nail, and to complete the proof the nail was also inclosed, and the needle certainly did support the nail with ease. As this looked like a pretty strong case, I visited the locality to see the experiment repeated. We armed ourselves with pieces of steel wire reasonably free from magnetism.

"The editor proceeded to repeat his experiment by holding the wire *in the water inside the pipe* from which it was flowing. I objected that this was not a fair test of the magnetic properties of the water, because the tube was itself strongly magnetic, and by placing the needle inside this tube, only an inch in diameter, it was brought within half an inch on every side of a magnetic body, and that magnetic induction will take place through water just as it will through any non-magnetic body. He said this was the way the other needle was charged, but that it made no difference, the water would charge just as well when entirely removed from the tube.

"I suggested placing the water in non-metallic (glass) vessels, and then to try the experiment. He cheerfully accepted the challenge, and he and his friends churned their wires in the water till darkness put an end to the trial without developing a particle of magnetism. He was not convinced, would try the experiment again when he had more time, and let me know the result. Nearly a year has passed, but I have heard nothing further from him on the subject of magnetic water."

The doctor then mentioned that many intelligent persons were deceived by the fact that magnetism may be imparted to pieces of steel, as a knife blade, if it be left in the direction of the magnetic dip or approximating to it, so that at a distance of several feet, or rods even, from the tube, he dips his knife blade in the stream and tests it after it has been thus exposed, he will find it possessed of faint magnetic power. He is told that if he will leave it longer, the water will impart to it its magnetic power more strongly, and it will become more sensibly magnetic. "Is not this *proof?* shall he not believe his own eyes? for he has seen all. Yet not all; for, while he watched, unseen forces have pulled at that bit of steel; gravitation has strained at it with a steady tug, yet all unseen. If you suggest this, the man will grant it at once. But other forces have been at work.

"The magnetic lines of force, like silken cords, have given their invisible and intangible strain upon that bit of steel. Little by little, atom by atom, this eternal force has worked its way through that bit of steel, bringing one molecule after another under its sway; give it time, and it will bring it all under its mysterious control. The force was none the less real because invisible; and he who will reject, even in physical science, the influence of the unseen because it is invisible, will find that the seen and the tangible will only mock and deceive him."

The doctor closed his able report with the conclusion that if the waters possessed therapeutic properties, it was not due to magnetism, for *the water has no magnetism.*

Dr. Duffield read but a small portion of his report.

He stated that we had no mineral springs in this State; that many of the wells termed magnetic have never reached the rock, but that the mineral substances found in the water had been taken up as it filtered through the soil, on its way to some hard and impervious strata upon which it had gathered. Some of these waters contained a large amount of organic matter, which alone should deter the practitioner from prescribing them for his patient. The doctor then gave a grouping of the wells, the principal of which are chalybeate, acidulous or carbonated, sulphurous, and saline. He said, that in prescribing these waters, the physician must remember that his patient must be sent away from the comforts of home, and we cannot be too careful how we send patients to these different springs, lest some time in some graveyard we may meet upon a tombstone the same lament which was found in England:

> "Here lies I and my two daughters,
> Killed by the drinking of Cheltenham waters;
> If we had stuck to Epsom salts,
> We would not have been in these here vaults."

Opium. By R. Rother.

The great importance of opium as a medicinal agent requires, and the peculiarity of its constitution admits, a very definite adjustment of its power. It has long been the effort of leading pharmaceutists to popularize a system for definitely standardizing the activity of crude drugs or their preparations. But only a very limited number of these substances have thus far yielded desirable results by the practically applicable methods of analysis at present known.

It is exceedingly fortunate, however, that opium—one of the most valuable in the materia medica list—can be so easily and accurately assayed. The standard of quality is based upon the quantity of its chief constituent, morphia, and the method of isolating it for this purpose is founded upon the original process of Sertuerner, by whom "the alkaloid" was discovered.

Among the numerous alkaloids and other principles of opium, are several besides morphia of acknowledged power, as opianina and papaverina, for example, but these are found only in minute proportion. There is another at least of medium power, but much inferior to morphia both in effect and quantity, called codeia, and another occurring copiously, but medicinally inert, named narceina, and one entirely destitute of narcotic properties, performing the function of a powerful tonic merely, and strangely denominated narcotina, in quantity exceeding all the others but morphia. Together with these a considerable quantity of undetermined or unknown compounds of a more or less active character, complete the list of ingredients to which opium owes its activity, and for all, taken as a whole, the gauge is the morphia strength.

The serious nervous disturbance following the usual effect of opium on the system, is attributed to an exceedingly subtle and as yet undetermined substance. But it has been found that ether will thoroughly remove this noxious and objectionable body. In consequence, a number of opium preparations, proprietary and otherwise, are in general use, all differing from ordinary opium compounds, by the reason that the preliminary action of ether was resorted to. The noxious substance, however, seems to be but sparingly soluble in water; so, then, a preparation made with an aqueous extract of opium, may possess an approximate identity to one made of opium purified by ether.

The elegant and unsurpassable deodorized tincture of opium of the Pharmacopœia, is as yet comparatively unknown, but its virtue is only apparently eclipsed by similar yet secret preparations, whose only merit over it is the advantage derived from a priority of introduction into general use through the customary system of advertising, and probably, also, a uniformity in morphia strength, determined by assay.

Although it is an officinal requirement that all opium entering

into the compounds of the Pharmacopœia should contain seven per cent. of morphia, the direction is rarely observed, and therefore an inferior opium employed otherwise according to the Pharmacopœia, will necessarily yield but a worthless or very weak preparation. However, now it is generally agreed that when opium is directed officinally, as in the preparation of Tincture of Opium, it should contain ten per cent. of morphia, or four grains of the pure alkaloid in the fluid ounce of the tincture.

Comparatively simple as the process of isolating the morphia for the purpose of assay may be, it still requires especial precaution and considerable experience to obtain strictly reliable results. In view of this fact we have numerous methods, each with its particular advantages, proposed to attain the desired end. But in most cases, and especially in doubtful ones, two separate assays are usually performed, and if possible by different yet equally accurate methods. To obviate this inconvenience, and insure a perfectly conclusive result at once, the number of these processes still accumulates.

The most prominent methods of assay are as follows:

The process of Merck is to boil half an ounce of opium first with eight ounces, then with four ounces of proof spirit, filtered, and the filtrates evaporated to dryness after the addition of two drachms of disodic carbonate. The brown residue is introduced into a tall cylindrical glass vessel and softened with water, the colored supernatant liquid poured off, the residue again washed with water and then brought in contact, for one hour, with cold alcohol, sp. gr. .85. The mixture is now poured upon a filter, the residue washed with alcohol, and then dissolved in half an ounce of distilled vinegar previously mixed with its bulk of water, the morphia again precipitated from the filtrate by the addition of a slight excess of ammonia, and after twenty-four hours the precipitate is poured into a filter, dried and weighed.

Duflos exhausts opium with cold water, adds one-eighth of its weight of monopotassic carbonate, and sets the mixture aside for twelve hours. The liquid is then filtered from the precipitated narcotina, and boiled until the effervescence of carbon dioxide has ceased. After twenty-four hours the morphia has all precipitated as a crystalline powder, and in order to free it entirely from adhering narcotina, it is again dissolved in very dilute sulphuric acid, the solution mixed with alcohol, until the whole liquid weighs nine-fourths as much as the opium employed, and the morphia reprecipitated with a slight excess of ammonia.

According to Mohr, the opium is three times successively treated with water, the liquids united, evaporated, filtered and poured into boiling milk of lime, containing one-sixth to one-quarter as much calcium hydrate as the weight of the opium used. After boiling a few minutes the mixture is poured on a linen strainer,

the precipitate washed with boiling water, and finally pressed. The strained wine yellow liquid is now reduced by evaporation to twice the weight of the opium, and filtered if necessary. This is now heated to boiling and the morphia precipitated by addition of ammonium chloride equal to one-sixteenth of the opium used. By solution in dilute chlorhydric acid and treatment with animal charcoal, the morphia can be further purified.

By a fourth method, the aqueous infusion of opium is treated with plumbic acetate as long as a precipitate occurs; this is collected on a filter, and washed with water until the filtrate is not perceptibly bitter. The excess of lead is now precipitated from the filtrate with sulphydric acid; the lead sulphide left in contact with the liquid for some time, then filtered, and the wine yellow filtrate cautiously treated with ammonia. A resinous precipitate containing narcotina is thereby separated, which adheres tenaciously to the walls of the glass. The liquid is now poured off, and the morphia precipitated by a further addition of ammonia.

Instead of using water the opium can also be exhausted with dilute acetic acid, the liquid repeatedly evaporated, after adding fresh portions of water until the excess of acid is expelled, and the narcotina, together with extractive, has become insoluble. The morphia is then precipitated with ammonia, washed with water and alcohol, and finally crystallized from absolute or ninety per cent. alcohol.

According to Thiboumery, opium is three times successively treated with cold water, and the infusions evaporated to a syrupy consistence. The extract is mixed with water, poured on a filter, and the residue washed with water until decolorized. The filtrate is now boiled and precipitated with ammonia; after cooling, the precipitate is filtered off, washed first with cold water then with alcohol, sp. gr. .94, until decolorized, and dissolved in boiling alcohol, sp. gr. .84, with the addition of animal charcoal, filtered, and the morphia crystallized from the solution.

Guilliermond rubs the opium, first broken into small fragments, three times with three times its weight of alcohol, 71 per cent. and filters into a wide mouthed bottle containing ammonia equal to one-quarter the opium used. After twelve hours, rather large colored crystals of morphia separate, together with small shining crystals of narcotina. The crystals are then poured on a linen strainer, washed with water, dried, and then thrown into water; the morphia sinks to the bottom, whilst the narcotina remains suspended and can be poured off.

By the method of Fordos, the opium, cut in slices, is first macerated with four times its weight of water, for twenty-four hours. The mixture is then thoroughly rubbed up in a mortar and poured on a filter; when the liquid has flowed off, a second and then a third portion of water, equal in weight to the opium, is poured on.

One-third of the mixed liquids is then precipitated with ammonia, to determine the requisite amount for the remaining two-thirds. To the remaining liquid an equal volume of alcohol, 85 per cent., is added, and twice the quantity of ammonia first used. The mixture is now agitated and transferred to a bottle, well stopped, and allowed to stand for two or three days. The deposited crystals are now poured on a filter, washed with weak alcohol, about 40 or 50 per cent., and then treated with ether, after this with chloroform, and again with ether; after drying, the crystals are weighed as pure morphia.

By Staples' process (the officinal process), opium is first macerated with five times its weight of water for forty-eight hours, then exhausted with cold water, the infusion evaporated to about eight times the weight of the opium, and about an equal volume of officinal alcohol added; to this an excess of ammonia, previously mixed with alcohol, is added in two portions, after an interval of twenty-four hours; at the end of twenty-four hours, the deposited morphia is first washed with a little diluted alcohol, then with water, dried and weighed.

From these various processes, we observed that the best method for exhausting the opium of its morphia is the treatment with cold water, preceded by a maceration; it is also seen that ammonia is the final precipitant in every case, and, with the exception of the third and fourth methods, alcohol is used in every instance to decolorize the morphia. In nearly every process the adhering narcotina is separated by again dissolving the impure morphia in some dilute acid, and precipitating it a second time. But in the method of Fordos, ether and chloroform are used for this purpose.

Now, to understand the relative value of all these processes, it must be known that morphia is insoluble in alkaline carbonates, quite soluble in ammonia (one grain dissolving in about 100 of the ordinary 18 per cent. ammonia), soluble in 1,000 parts of cold water, and in 500 when hot; it is also soluble in about 100 parts of strong alcohol, which solubility gradually approaches that of water as the alcohol is weaker; it is insoluble in ether, but soluble in 60 parts of chloroform. One grain of pure morphia will also dissolve, after a few moments shaking, in a mixture of five fluid drachms of strong alcohol, four fluid drachms of water, and one fluid drachm of chloroform. But the same quantity of morphia is scarcely if at all diminished by a mixture of four fluid drachms each of strong alcohol, water and ether. The writer believes that the exceeding solubility of morphia in chloroform may sometimes be due to acidity of the latter, and, therefore, chloroform should never be used for purifying the morphia in opium assays. Ammonia, although used in all the processes, is objectionable because an excess is required first to separate the morphia completely; and as it is difficult to ascertain the exact amount in each case, an im-

moderate excess may again dissolve some of the morphia or prevent its precipitation. For this reason, a fixed alkaline carbonate is greatly preferable as a precipitant, and its employment for this purpose really constitutes the second stage in the methods of Merck and Duflos. Aside from the use of alkaline carbonate, these two processes—but especially the original and ingenious one of Duflos—also furnish the ground work for all the others, with the exception of the second stages of Mohr's and the fourth method above given. The methods of Guilliermond, Fordos and Staples, are also very objectionable, firstly, that the morphia is precipitated from solutions that are too dilute, and, secondly, that these solutions are alcoholic; because, if even two and a half fluid ounces of water will retain one grain of morphia in solution, the same volume of alcoholic liquid will dissolve much more. Moreover, morphia will remain in such a solution more abundantly than if it were precipitated as a crystaline powder from a concentrated aqueous solution, and then treated with the same volume of these solvents.

If in an alcoholic solution ammonia is used as a precipitant, it is utterly impossible to know when the proper quantity has been added, unless determined by a preliminary trial according to Fordos. However, the writer has found the case to be quite different with a concentrated aqueous solution. If to such a solution ammonia, moderately dilute, be added drop by drop, with constant stirring, the gelatinous precipitate at first produced immediately contracts and rapidly subsides the moment a sufficiency or slight excess of ammonia has been added. The writer thinks this to be an exceedingly practical and important indication in the use of ammonia as a precipitant. The same observation was made with disodic carbonate, only the precipitation is less rapid at first than with ammonia.

Morphia exists in opium combined with sulphuric and meconic acid, but often entirely with the former when the latter is absent. The meconic acid is tribasic, and the alkaloid, or any other monad base, can form with it either monobasic, dibasic or tribasic meconate. The trimetallic salts are usually the most soluble, and the monometallic, or so-called acid salts, the least. Morphia originally exists in the opium when in combination with meconic acid, always as the tribasic or normal salt, owing to the constant deficiency of meconic acid. When morphia is precipitated by ammonia or disodic carbonate from its native union with meconic acid, the reaction may take place, as is shown in the following equations:

$$C_7H\,(C_{17}\,H_{19}\,NO_3)_3O_7+3\,(CO_3\,Na_2)+3\,(H_2O)=3\,(C_{17}\,H_{19}\,NO_3.H_2O)+C_7H\,Na_3\,O_7+3\,(CO_3\,NaH)$$

$$C_7H\,(C_{17}\,H_{19}\,NO_3)_3O_7+2\,(CO_3\,Na_2)+3\,(H_2O)=3\,(C_{17}\,H_{19}\,NO_3.H_2O)+C_7\,H_2\,Na_2\,O_7+2\,(CO_3\,NaH)$$

$$C_7H\,(C_{17}H_{19}NO_3)_3O_7+CO_3Na_2+3\,(H_2O)=3\,(C_{17}H_{19}NO_3.H_2O)+C_7H_3NaO_7+CO_3NaH$$

The writer, after numerous trials of these various methods, has devised a process which, for accuracy, speed and simplicity, is equal to any and superior to most, and therefore recommends itself for the use of pharmaceutists generally.

This process is a modification of the methods of Merck, Duflos and Fordos. The opium, if moist or in powder, is first subjected to maceration, then transferred to a filter and treated with cold water until thoroughly extracted, the filtrate evaporated to a small bulk and treated (without filtration, because the sediment of narcotina, if any, is effectually removed in the subsequent part of the process) with a concentrated solution of disodic carbonate. This precipitates, besides morphia and the usual amount of coloring matter and narcotina, nothing that water, alcohol and ether cannot dissolve. Opium contains no soluble mineral matter that could possibly enter the aqueous solution, and then be precipitated as an insoluble carbonate, unless such were fraudulently added, which is not known to be the case. However, it is worth while here to state that if glycerin were added to keep the opium moist, all the present methods of assay would be entirely unavailing, as the glycerin would retain much of the morphia in solution, despite ammonia or disodic carbonate. After six to twelve hours, the precipitate is poured on a balanced filter, first washed with a little water, then with a mixture of equal measures of strong alcohol, water and ether, until decolorized, dried and weighed. The first objection that might be raised against this process is, that the morphia is at once precipitated from the concentrated liquid obtained by evaporating the aqueous infusion. But the writer has found that it is utterly useless to filter this liquid, because only loss of time and material is incurred, and nothing whatever gained. The greatest amount of sediment in such a solution—resulting from 200 grains of opium—that the writer ever noticed, weighed only three grains, and was completely soluble in diluted alcohol. The second objection might be, that the morphia obtained by precipitation with alkaline carbonate can be contaminated with earthy carbonates, but the precipitate is perfectly soluble in caustic alkali.

The peculiar advantages of this process are, firstly, that the morphia solution is never removed from the vessel in which it is concentrated.

Secondly, that the precipitant can be used even in large excess without danger of disolving the morphia.

Thirdly, that when the morphia is precipitated from a concentrated aqueous solution, it is less colored and much more easily and thoroughly decolorized subsequently than when precipitated from a concentrated alcoholic solution.

Fourthly, that with an aqueous solution no extra precautions need be taken to prevent inordinate evaporation, as is the case with an alcoholic liquid; the dish requires simply to be covered and set aside, to give the morphia time for complete separation.

Fifthly, that the morphia is poured on a tared filter, from which it is not removed again until washed, dried and weighed.

Sixthly, that the morphia is not decolorized with weak alcohol in one operation, and freed from adhering narcotina by means of ether in another; but that this operation is performed in one process more expeditiously and thoroughly by the use of a mixture of alcohol, ether and water, with which the morphia is thoroughly mixed by means of a small glass rod after each new addition of the mixture.

The necessary apparatus, when reduced to a practical minimum, is summed up in an ordinary druggists' prescription scale that will weigh accurately to the fourth of a grain; a four-ounce porcelain capsule, a small earthernware pestle, a very small and blunt edged glass rod, a 5-inch ordinary filter, two 4-inch filters, which, after being dried, must be exactly equal in weight, a small glass funnel with a slant height of two and a half to three inches, an ordinary six or eight ounce wide mouthed bottle, a small, flexible steel spatula, a piece of sheet-iron covered with a thin layer of sand for a sand-bath, and any vessel of convenient size and shape containing hot water, to serve as a water-bath.

The assay is now performed as follows:

Two hundred grains of opium—whether in powder or moist lump—is always taken, for the object of greater accuracy. If it be in the latter form, it must first be broken into small fragments before weighing. It is then placed in a porcelain capsule of convenient size, and two fluid ounces of cold water poured on; after a maceration of several hours, the mass is stirred up with a small pestle, and this operation frequently repeated during a maceration of six or eight hours, or until the fragments have become perfectly disintegrated; one or two fluid ounces of cold water are now added, stirred up, and the magma poured into a five or six-inch filter, previously adjusted in a funnel and moistened with water; when the liquid, which is collected in a six or eight-ounce wide mouthed bottle, has flowed off, more water is poured unto the opium, some of it having first been used to wash the capsule and pestle. Immediately after each addition, the mass on the filter is carefully stirred up with a small glass rod, and this is several times repeated in the beginning, but latterly the residue is left at rest, and water continuously poured on until twelve fluid ounces of filtrate has accumulated. This liquid is now poured into the capsule again, in portions of two or three fluid ounces—as fast as the filtrate collects—placed on a sand-bath moderately heated, and evaporated to about one and a half fluid ounces. After cooling, forty

to sixty grains of disodic carbonate, previously dissolved in two fluid drachms of water, is added, stirred with a glass rod, the mixture covered up and set aside for six to twelve hours to give the morphia time for complete separation. Two four-inch filters, well dried, are now exactly balanced, one of them laid aside and the other placed in the funnel and moistened with water. The liquid with the precipitated morphia is now stirred with a spatula and poured into the filter. By means of the spatula the precipitate adhering to the dish is perfectly removed, and washed into the filter with a portion of the filtrate already collected; the dish is then further washed with small portions of distilled water, and the washings also rinsed into the filter. The precipitate, after being washed with more water, using about four to six fluid drachms in all, is then treated with a mixture of five or six fluid drachms each of strong alcohol, water and ether, until the filtrate is colorless, or nearly so; the above quantity is about sufficient for the purpose. The mixture also must have perfectly cooled before it is used. A portion is first poured on to the precipitate and carefully stirred with a glass rod, and the process repeated after each addition of the liquid, until finally the precipitate contracts, assumes a granular appearance and falls to the bottom of the filter. The stirring up of the precipitate is important in this part of the process, as through it a very effectual washing of the morphia is secured with the least possible quantity of menstruum. The morphia can also be decolorized, first with a mixture of one fluid ounce each of strong alcohol and water, and the narcotina then removed by washing with ether. But then it requires much more of the latter (about two fluid ounces), and the morphia must always be digested a short time with each new portion added. The filter containing the morphia is now detached from the funnel, laid on several thicknesses of unsized paper for a short time to remove most of the adhering liquid by absorption, and then dried, either by exposure in a warm place, but best on a water bath by being placed on a sheet of filtering paper in a porcelain dish, floated on hot water. The empty and also dry filter is then laid on one side of the balance, and the one holding the precipitate in the other; the weight of the morphia thus obtained is divided by 2, and the result indicates the percentage in grains. The morphia is in the form of a grayish-white granular powder.

When making preparations of opium—as laudanum, for instance,—it is necessary to exhaust the opium first with the menstruum; then using a quantity of the liquid representing 200 grains of opium, evaporating off the alcohol, diluting the residue with water, filtering to separate the resinous matter dissolved by the alcohol, evaporating the filtrate to a small bulk, and determine the morphia as above directed. From this the whole amount of morphia in the concentrated liquid is calculated, and this diluted

so that every fluid ounce of the diluted liquid, or in other words laudanum, shall contain four grains of pure morphia in the fluid ounce. If the opium should be deficient in morphia, and the first liquid obtained have less than four grains in the fluid ounce, then the requisite quantity of an assayed opium must be added to furnish the necessary amount of morphia.

In adjusting the strength of deodorized tincture of opium, a quantity of the aqueous infusion, before evaporation, corresponding to 200 grains of opium, is treated precisely according to the above method of assay from the beginning. The writer believes that although the ether removes the odorous substance, but very little of the narcotina is removed, and consequently that would contaminate the morphia unless this were subjected to the whole routine of the assaying process.

The writer has observed that when an aqueous solution of opium is treated with ammonia or disodic carbonate, the characteristic fruity odor of deodorized tincture of opium is almost instantly developed; the same occurs, but more slowly, when an alcoholic solution of opium is first largely diluted with water and then subjected to the same agency. This is also effected in an ordinary alcoholic solution, but the deodorization progresses very slowly. These indications would second the plausible view that the fine aroma and the so-called narcotic odor of opium are due to two distinct substances, existing originally side by side in the opium, but that the extreme delicacy of the former is completely concealed by the powerful predominance of the latter. It is almost certain that the substance possessing the narcotic odor undergoes an entire change in contact with the alkaki, because it cannot be reproduced by the subsequent addition of an acid, which would probably be the case were it an acid body that had combined with the alkaline base. It is highly probable, then, that the noxious body removed by the ether is the substance destroyed by the alkali. If this were true, the deodorized tincture of opium could be much more economically and expeditiously prepared, by adding ammonia or disodic carbonate, and then restoring the disturbed equilibrium again by neutralization with sulphuric acid.

The magnificent and useful preparation called "Liquor Opii Compositus," invented by Dr. Squibb, is much used in some localities. But the process of Dr. Squibb is too scientific for general use. About six months ago the writer had occasion to prepare some, and in order to render the process practicable was compelled to make some alterations. This article at the present time is as beautifully clear and fragrant as when first prepared.

Dr. Squibb's preparation is of the laudanum strength in morphia—that is, one fluid ounce contains four grains of the pure alkaloid, equal to five grains of the sulphate, and thirty minims of it are composed as follows:

An assayed so-called depurated solution of opium.....14 minims.
Strong Alcohol.....13 "
Chloroform ..... 1 minim.
Acetic Ether ..... 2 minims.

This gives 16 minims of chloroform and 32 minims of acetic ether in the fluid ounce. But the writer was called upon to furnish it at once, and seeing that it was practically possible to comply, prepared it extemporaneously as follows: Having at hand deodorized tincture of opium, acetic ether, and Dr. Murdock's solution of chloroform in glycerin, containing 17 minims of chloroform in the fluid drachm.

For one fluid ounce of Liquor Opii Compositus, approximately, Take of

Deodorized tincture of opium ..... 7 fluid drachms.
Dr. Murdock's chloroformic solution .. 1 fluid drachm.
Acetic ether.....32 minims.
Mix.

The writer believes with Dr. Squibb that in this preparation the alcohol should be a minimum. Therefore, a preparation having the alcoholic strength of deodorized tincture of opium, or even weaker, is much better. This is secured by the use of Dr. Murdock's solution of chloroform in glycerin, and the process given by him is as follows:

Place 3 fluid ounces of glycerin in a conveniently sized mortar, and rub up with it by gradual addition one fluid ounce of chloroform; introduce this mixture into a bottle to let a little undissolved chloroform subside, and then, after separating it, rub this up with another fluid ounce of glycerin, and mix the whole together. This is a permanent solution, and is miscible with water in all proportions.

By this means an accurate formula for Liquor Opii Compositus would be as follows, for 2 pints: Take of the assayed concentrated solution of opium, purified by ether according to the Pharmacopœia, a volume corresponding to 128 grains of morphia.

Strong alcohol..... 7 fluid ounces.
Dr. Murdock's solution of chloroform .. 4 " "
Active ether .....17$\frac{1}{15}$ fl. drachms.
Water sufficient. Mix.

—*The Chicago Pharmacist.*

Differential Diagnosis of Acute Phthisis and Typhoid Fever.

By LEVIN J. WOOLLEN, M.D.

To diagnose betwen acute phthisis and typhoid fever is in many cases exceedingly difficult. There are few physicians long in practice who have not been brought face to face with this difficulty, and earnestly desired more light upon the perplexing subject.

The most familiar works on the practice of medicine do not give this differential diagnosis the consideration which its importance demands. Niemeyer states that in acute miliary tuberculosis the symptoms are "so very like those of typhus that the most experienced diagnosticians acknowledge to having met with instances in which a diagnosis between the two was absolutely impossible, and where patients dying with a diagnosis of typhus really had died of tuberculosis, and conversely." Yet Niemeyer's rules for the diagnosis are very unsatisfactory when applied to these diseases, at least as they occur in this part of the country.

Dr. Flint says that in making a diagnosis typhoid fever is to be excluded by the absence of the characteristic symptoms which belong to the clinical history of that disease; but unfortunately in acute phthisis we have many of the more prominent symptoms of typhoid fever.

Da Costa states that acute phthisis "often begins with a chill; fever follows; at first, like any inflammatory fever, with thirst, anorexia, quickened pulse, parched lips, and hot skin; but soon accompanied by exhausting night sweats and rapid emaciation, which, in connection with the intense restlessness and prostration and the frequent supervention of delirium, may cause the febrile disturbance closely to resemble typhoid fever." Again, the same eminent diagnostician says: "Acute phthisis may simulate other affections besides those of the chest. It has at times the delirium and prostration, the dry tongue, and the bronchial *ralés* of typhoid fever. The diarrhœa and the abdominal symptoms are, however, wanting." Yet simultaneous deposition of tubercles in the intestine may cause these; and in this case the only mark of difference from typhoid fever is the absence of an eruption."

My own experience is, that the peculiar eruption of typhoid fever is observed in but few cases. I have been so often disappointed in my efforts to discover it that I now seldom look for it, endeavoring to base my diagnosis on other and more certain grounds. In the further study of the means of distinguishing between these disorders, it will be best to examine the prominent symptoms occurring in each, and endeavor to show to which the weight of each symptom belongs.

According to Niemeyer there is, as a rule, an earlier appearance

of the cough and dyspnœa and a greater intensity in tuberculosis than in typhus. In exanthematic typhus there are early and violent bronchitic symptoms; but the eruption of this disorder is highly characteristic, while there is none in miliary tuberculosis.

My answer is, that in the Western States, at least, we have cases of typhoid pneumonia where the cough and dyspnœa are prominent symptoms from the beginning, the abdominal disorder succeeding in a few days.

The author just referred to then asserts that in almost all the cases of abdominal typhus a careful examination will reveal a few spots of roseola upon the upper region of the abdomen. But, as I have already stated, the characteristic eruption of typhoid fever is, according to my observation, rarely discovered.

The third point referred to by Niemeyer is, enlargement of the spleen, rarely found in acute miliary tuberculosis, and then but slight; is almost always found in abdominal typhus. In reply it may be stated, that the physician would not feel himself justified in resting his diagnosis upon such evidence of an enlarged spleen as he could obtain; for did he believe, for example, that his case was one of acute phthisis, he would be very liable to attribute the increased dullness from such enlargement to tuberculous deposition, or other pathological change in the lung itself; and, on the other hand, were the case typhoid fever, intestinal tympanites would seriously interfere with the requisite examination below the false ribs. Besides, it has been justly observed that the spleen is sometimes found greatly enlarged without any apparent connection with other affections. "The enlargement may be of short duration; and it is then probably due, mainly or exclusively, to an accumulation of blood or engorgement."

While, according to Niemeyer, meteorism, liquid stools, and tenderness in the ileo-cœcal region—symptoms absent in acute miliary tuberculosis—are almost always present in abdominal typhus; yet, according to Da Costa, they may occur also in the former affection from a simultaneous deposition of tubercles in the intestines.

Niemeyer's fifth point is, that typhus rarely supervenes upon chronic disease of the lungs, while the other seldom attacks others than those thus suffering, and hence dullness at the apex of either lung is of great diagnostic significance.

Yet, in our country, typhoid fever does sometimes attack those who have chronic pulmonary disease, or such as have, to use their own words, "weak lungs." These cases, however, have a less fatality than those occurring in persons previously robust and healthy, especially just after adolescence. Marked dull-

ness at the apex of either lung will seldom be found; "for the tubercles being minute and discrete, and moreover existing equally in both lungs, exploration of the chest may furnish no marked disparity in the resonance on percussion, and none of those modifications of the respiration and voice which denote pulmonary solidification."

Finally, Niemeyer states, upon the authority of Wunderlich, that the temperature is much lower in acute miliary tuberculosis than in typhus, seldom reaching 104° F., and is out of all proportion to the great rapidity of the pulse.

The evidence derived from temperature can only be corroborative; it is not sufficient to determine a doubtful diagnosis. And, moreover, few physicians are provided with thermometers, or at any rate are in the habit of making thermometric observations, at least in country practice.

Having thus examined these points as presented by Niemeyer, and found them by no means conclusive, the inquiry still remains, How are the two diseases to be distinguished? It must be acknowledged that no *entirely* satisfactory answer can be given. From my own experience, somewhat limited it is true, I would say, first, that the *facial expression* will be of as great value as any one symptom.

Thus the patient has a peculiar look or expression in severe cases of typhoid fever (and these are the ones we are liable to confound with phthisis) not found in any other disease. Of course it is not possible to convey in words an intelligent description of such expression. It is something to be learned at the bedside, and there only. "The countenance is marked by great debility and tremulousness of the muscles, and by great sinking. The bones are more prominent, the intervening spaces more sunk and depressed than natural. The surface is sometimes slightly flushed, and sometimes cool and clammy. The eye-lids are frequently partly closed, and the eyes suffused, dull, and covered with a film of mucus. The mouth is apt to be partly opened; the teeth and lips affected with dark-colored glutinous sordes. The articulation is difficult and imperfect, and attended with great effort, and with tremor and an inadequate action of the lips and of the tongue, which is put out with tremor and difficulty."

Next, in those cases of acute phthisis that have come under my own observation, in which the delirium appeared early, I found it more *active* than the ordinary *typhomania*. Thus in one case, where acute phthisis supervened upon rubeola, the patient during most of her waking hours for a few days was engaged in singing hymns—many of them being improvised.

The dull eye and half closed lids of typhoid fever were absent, and *her mind dwelt on things around her*, in this respect differing from typhoid fever, in which disease, as Watson says, the mind is

elsewhere. "The patient wanders at first in the night only, and the delirium commonly appears on his waking from disturbed sleep. Sometimes he can only be kept in bed by the imposition of some restraint. Usually, however, his rambling is of a tranquil kind, and without agitation. *His mind seems elsewhere.* He is inattentive to all that passes around him; but he lies still, muttering disjointed words or sentences, like a man talking in his dreams."

The evidence afforded by the tongue is entitled to some though no great weight. In those cases of acute phthisis to which my attention has been called, the tongue, if it became dry, pursued a different course in attaining its dry condition from the *ordinary* dry tongue of typhoid fever. Thus, I believe, without exception, I noticed that the organ was covered with a white fur, which became thicker and more prominent until it "slipped off" hurriedly, as it were; and, instead of leaving the surface in anything like a normal condition, it was found to be *red, glassy and dry.* In ordinary cases of typhoid fever the tongue, being covered with a white coat, gradually changes to a brown; and this brown coat, becoming more prominent, even shows signs of dryness; the dryness in most cases beginning at the tip and in the center, and gradually extending over the whole upper surface of the organ. I am aware, however, that in some cases of typhoid fever the coating falls off suddenly, and leaves the surface red, glassy and dry. In such cases I think I could trace, if not tubercular deposit in the intestines, at least a marked tubercular diathesis; and the patients, if they recover from the existing disease, will, as a rule, ultimately fall victims to phthisis.—*American Practitioner.*

Experiments on the Effects of Alcohol on the Human Body. By Dr. E. A. Parkes and Count C. Wollowicz.

An important series of experiments on this subject has been made conjointly by the authors. Their object was to ascertain the physiological and dietetic effects of alcohol on the human body in a state of health. The plan of observation was as follows:—For twenty-eight days, a man, an intelligent, healthy soldier, remained on a diet precisely similar as to food and times of meals in every respect, except that for the first eight days he took only water (in the shape of coffee, tea, and simple water); for the next six days he added to this diet rectified spirit, in such proportion that he took, in divided quantities, on the first day, one fluid ounce of absolute alcohol; on the second day, two fluid

ounces; on the third day, four ounces; on the fifth and sixth days, eight ounces on each day. He then returned to water for six days, and then for three days took each day half a bottle (twelve ounces) of fine brandy, containing 48 per cent. of alcohol. Then for three days he returned to water. There were thus five periods, viz., of water drinking, alcohol, water, brandy, water. And for ten days before the experiments were commenced, the man, a beer-drinker usually, abstained from any alcoholic liquid. The food taken was all weighed; it was the ordinary diet. The general results obtained may now be very briefly summed up. It would seem, first of all, that, other conditions remaining the same, the weight of the body is unaffected by the taking of alcohol. With regard to temperature, we are told "that the general result from all observations surprised us (the observers), considering the numerous experiments on men and animals in which the temperature has been found to be lowered by alcohol." The tendency, indeed, was rather in the opposite direction, especially with the brandy. The alcohol was, however, never pushed far, because the object was not to induce any narcotism, but to ascertain its dietetic value; and the discrepancy involved in the observations of Drs. Parkes and Wollowicz may be in part further explained by the fact that the individual experimented upon possessed a perfectly healthy resisting, and not a diseased or weakened organism. The diminution of temperature by large and narcotic doses is not disputed; all that our experimenters affirm is, that with a small amount of alcohol and a good supply of food, the temperature is not diminished. The effects on the circulation described are very interesting. The pulse was not only more frequent and fuller when alcohol and brandy were used, but the increased frequency was persistent after the omission of the alcohol. The pulse had not reached in six days the point which was proper to it before the alcohol was given.

The first day of alcohol gave an excess of four per cent., the last twenty-three per cent., in the beats of the heart — that is, an excess of thirteen per cent. as a mean of six days. This, on calculation, amounts to an excess in the daily work of the heart equal to lifting 15.8 tons one foot during the first two, and 24 tons during the last two days of the alcoholic period. On the fifth and sixth days after the alcohol was left off, when its elimination was complete, the heart showed in the sphygmographic tracings signs of unusual feebleness; and when subsequently brandy was given, it was clear that it was acting upon a heart whose nutrition had not been perfectly restored. The observers say that it is evident that in the man experimented upon, the amount of alcohol the heart will bear without losing its healthy sphygmographic tracing is small, and it must be supposed that eventually some disease of the heart will follow the excitement induced

by large doses of alcohol. The action on the kidneys of a moderate amount of alcohol is not marked; the amount of water eliminated is rather increased; no change takes place as regards the nitrogen when the ingress of nitrogen is constant, — certainly it is not diminished in amount. This conclusion is antagonistic to the observations formerly made on the point, which indicated that nitrogen is retained in considerable amount in the body under the exhibition of alcohol, which in this way increases assimilation, and when food is deficient saves the tissues from waste.

Little change is also effected in the phosphoric acid, the chlorine, and the free acidity of the urine. The elimination of nitrogen by the bowels was not lessened. The elimination of alcohol by the lungs was marked; indeed, a good deal must have been got rid of in this way,—by the skin considerable, by the kidneys slight. Drs. Parkes and Wollowicz think that, though not excessive at any one time, the exit is longer continued than Anstie and Dupre suppose.

Special note was taken of the effect of alcohol on digestion and appetite. It seems that in the man under observation, some point near two fluid ounces of absolute alcohol is the limit of useful action on appetite. It might have been found to be less had the experiments been continued. Further, although large doses interfered with the appetite, they did not interfere with or retard primary digestion, as far as could be seen, nor the normal chemical changes that result in the elimination of nitrogenous excreta, phosphoric acid, and the like. In a word, no evidence was forthcoming to show that alcohol either saved or exhausted the tissues; that is to say, the good or evil ascribed to alcohol in this direction was not observed by Drs. Parkes and Wollowicz in the healthy man. It may be, of course, different in disease. The effect on the nervous system was shown only by subjective symptoms —headache, heaviness, loss of cheerfulness and alacrity, torpor and sleepiness; and narcotism was induced by an amount of alcohol less than four and nearer two ounces daily, and the experimenters conclude that the narcotism, the loss of appetite, and the increased frequency in the heart's beats, are related to the common cause, viz., implication of the nervous system. The general inference of the experimenters on this point is, that something under two fluid ounces of alcohol could be taken daily without harm by the man under observation. The following are the final conclusions given by Dr. Parkes and his coadjutor. "It will be seen that the general result of our experiments is to confirm the opinion held by physicians as to what must be the indications of alcohol in health and disease. The effects on appetite and on circulation are the practical points to seize; and, if we are correct in our inferences, the commencement of narcotism marks the point when both appetite and circulation will be dam-

aged. As to the metamorphosis of nitrogenous tissue, it seems improbable that alcohol in quantities that can be properly used in diet, has any effect; it appears to us unlikely (in the face of the chemical results) that it can enable the body to perform more work on less food, though by quickening a failing heart it may enable work to be done which otherwise could not be so. It may then act like the spur in the hide of the horse, eliciting force, though not supplying it." The experimenters, while recognizing further the great practical use of alcohol in raising a failing appetite, exciting a fainting heart, and accelerating a languid capillary circulation, are strongly impressed with the need of moderation and caution in its use. They do not deal with diseased conditions, but only a state of health, and do not refer at all to the action of wine or beer. — *Druggists' Circular and Chem. Gazette, Nov.*, 1870, *from London Pharm. Jour.*

Acute Scleriasis; Spontaneous Recovery. Scleroderma; Treatment by Galvanization. By HENRY G. PIFFARD, M.D., Surgeon to the New York Dispensary for Diseases of the Skin.

Since Therial, in a monograph entitled "*Scleriase chez les Adultes*," first called attention to a singular affection of the skin, upwards of fifty cases, more or less closely resembling those described by him, have been recorded by different observers.

These cases may be readily divided into two distinct classes possessing but one or two prominent features in common; but, on the other hand, attended by circumstances which would seem to indicate that they have little, if any, pathological resemblance or connection; that, in fact, two distinct affections have been confounded under the same or similar names.

The most marked features to be observed in all of these cases are, a peculiar hardness and inelasticity of the integument, the firmness with which it is bound down to the subjacent tissues, and the impossibility of pinching it up into folds.

In the first class of these cases, we find that the invasion was rapid, that the lesion was extensive, usually occupying the greater portion of the integument of the upper half of the body and arms, the whole being involved in the course of a few days or weeks. Recovery generally took place in the course of a few months, under the influence of the most varied treatment, and even spontaneously. The microscope has failed to afford any clue to the nature of the affection.

In the cases of the second class, we notice that the affection is exceedingly chronic, and spreads from one or more points in patches or bands. It may occupy years in its progress, and is uninfluenced by the usual therapeutic agencies, many of those affected dying from intercurrent disease. The microscope has displayed well-marked changes in the texture of the tissues involved.

As full descriptions of these cases have been published and epitomized by different writers, we deem it hardly necessary to enter upon greater detail, but would refer to recent compilations by Dr. HILTON FAGGE, in *Guy's Hospital Reports for* 1867, and by Dr. W. de F. DAY, in the *Am. Journal of Med. Sciences*, July, 1869.

In the following cases we have confined the term *Acute Scleriasis* to an example of the first class, and the term *Scleroderma* to two examples of the second. These examples are reported for the sake of showing the contrast between the two diseases, and of drawing attention to a method of treatment which would seem to be appropriate to the latter affection.

ACUTE SCLERIASIS.

David Gilbras, a native of Ireland, aged 49, and a blacksmith by occupation, came under the care of Dr. E. G. Janeway in the early part of the year 1869, suffering from emphysema of the lungs and chronic bronchitis. He remained under the care of Dr. J. for more than a year, without presenting any novel or peculiar features; but about the 1st of March, 1870, he noticed a stiffness on moving his neck. This was soon followed by a similar condition affecting the arms, back, chest, and abdominal region. The affection reached its height in about ten days, and then remained stationary for about four weeks longer, when it began to slowly decline. In April, Dr. J. kindly sent the case to the dispensary, and it came under my observation about six weeks after its first appearance. Upon examination, I found the integument of the parts above mentioned to be firmly adherent to the tissues beneath, but not discolored. It was impossible to lift or pinch it up in folds, or to cause it to glide over the underlying connective tissue. The patient was free from pain, and complained only of the inconvenience of being encased in an inelastic covering, which impeded the movements of his arms, and compelled the abandonment of his occupation. With the exception of his pulmonary difficulty, his organs and functions were in a normal condition. Careful inquiry failed to throw any light upon the determining cause of the attack, except, perhaps, frequent and sudden changes of temperature; for he stated that when overheated at the forge, he sometimes stood in a draught

at the door to cool himself. Hoping and expecting to obtain some information by the aid of the microscope, I removed with a cutisector a thin section of skin from the side, an inch or two above the crest of the ilium. This spot was chosen, as it presented the most marked alteration, the affection having commenced to subside upon the upper portion of the chest and arms. The section was examined fresh in serum, and afterwards prepared and mounted in Damar. To my surprise, I was unable to detect any abnormal appearances.

The patient was placed upon small doses of quinine, in addition to the remedies prescribed by Dr. Janeway for his pulmonary difficulty, the quinine being given as a placebo, and to satisfy him that something was being done for his skin, rather than with a view to therapeutic result. The affection gradually subsided, and in three months recovery was complete.

SCLERODERMA.

Of the following cases, the first is an abstract from a report by Dr. Fred Fieber, in the *Wiener Med. Wochenschrift*, Nov. 26th, 1870; the second came under my own observation at the Dispensary for Skin Diseases.

Dr. Fieber's patient was a girl of eleven years of age, and was admitted into the Vienna General Hospital on the 3d of May, 1869, with the following history:—Previous to the occurrence of the disease she had been frequently beaten, especially upon the left shoulder and the region of the chest. The child's father believed this to have been the cause of the disease. Eight months before her entrance into the hospital, there appeared over the left scapula a painless swelling or tumor, together with spots on the left upper extremity. The spots had brownish contours, and were accompanied with atrophy of the underlying muscles, a sclerema of the connective tissue corresponding to the left scapula, left breast, and whole of the left arm, which last seemed to be covered with a thick leathern sheath. The skin at some points was covered with scabs, and at others presented a cicatricial appearance.

Dr. Neumann made a microscopical examination, and found the appearances usually found in scleroderma.

Dr. Fieber believed the affection to be due to lesion of the trophic nerves, and commenced the treatment by galvanization of the sympathetic with 20 Daniel's elements, together with labile applications (30–40 El.) to the affected parts; in addition, Faradization of the atrophied muscles, with occasional steam baths. Electricity applied daily.

By the 30th of May, the skin had already become more supple.

By the first of June, the tissue along the external bicipital sulcus, to the breadth of half an inch, had become entirely soft, and, on the 5th of June, the sclerosis had lessened greatly in the scapular region. Progressive improvement occurred until the 10th of July, at which date the treatment was modified in the following manner: The left forearm was covered with diachylon, and the galvanic applications were confined to the upper arm, breast and shoulder. This was continued until the 14th of October, at the end of which time no further change had occurred in the tissues of the forearm, while the parts to which the current was steadily applied had become much softer.

On the 13th of February, 1870, there appeared near the right ear a patch of skin an inch long, and from two to three lines wide, which was deprived of pigment, thickened, and could scarcely be raised. This part received labile applications. By the 5th of March, the disease had almost entirely disappeared. On the 24th of March, without apparent cause, severe inflammation of the whole arm occurred, from which she recovered by the latter part of July.

Case II.—Johanna Achapt, born in Germany, aged 39 years, came to the Dispensary for Diseases of the Skin on the 20th of December, 1870, with the following history: Two years and a half before applying to the dispensary, she discovered that the skin behind the left malleolus was hard and unyielding, and felt like the calloused skin of a working man's hand. This condition continued, and began to extend up the outer side of the leg, in spite of various treatment. She occasionally suffered from pain in the affected limbs, but her chief complaint was on account of the impaired mobility and strength of the member. There was no appearance of the morbid condition upon any other region of the body. The general health was good.

On examination, I found that the skin behind the malleolus was hard, white, and its outermost layers disposed to loosen and curl up: these, however, could not be entirely removed without inflicting great pain. The skin was firmly bound down to the subjacent tissues, and tightly stretched as it were over the malleolus, and was apparently thinned and cicatricial in character. It could not be moved to the slightest degree over the bone.

Above the ankle the skin continued to present a sclerosed character, but appeared to be thicker than normal. As it was immovably attached, however, to the tissues beneath, its exact thickness could not be precisely determined. This condition extended up to the upper third of the leg, and occupied the greater portion of its external and posterior aspects. At the lower portion of the leg the peronei could not be distinguished from the neighboring border of the fibula. The surface of the skin was somewhat heightened in color, and presented a slight tendency

to the exfoliation of epidermis. Sensation, tested by the æsthesiometer, indicated equal tactility as compared with corresponding points upon the other leg, but there was increased sensitiveness to pain, especially marked in those parts which were most profoundly altered. The temperature of the parts, as ascertained by a Seguin's surface thermometer, was 58° F. behind the malleolus; 74° at the middle; and 81° at the upper part of the leg. Corresponding points upon the healthy limb indicated 74½°, 78°, and 81° respectively. Above the knee the thermometer registered 89° on each limb. Four and a half inches above the ankle, the left leg measured 7½ inches in circumference, and the right 8 inches. This was apparently due to muscular atrophy from want of use.

Treatment was commenced upon the 20th of December by the application of the positive rheophore to the upper part of the left leg, and the negative was then moved slowly over the affected portions. It may be proper to state that at this time we were not aware of Fieber's case, or that galvanism had ever been applied in the affection we were treating. The applications lasted from five to ten minutes at each sitting, and were repeated every other day. Perceptible improvement was manifested after the fifth or sixth application of the continuous current. Improvement continued, and the patient was presented at the January and February meetings of the New York Dermatological Society. By the middle of March, the skin above the malleolus had resumed its normal aspect, and was freely movable upon the cellular tissue. The portion which lay immediately over the malleolus was also freely movable over the bone, and its cicatricial appearance was somewhat modified, having lost to some extent its dead white color. Considering the dermic condition as substantially well, we commenced Faradization of the gastrocnemius and other muscles. This was continued for a few days only, as the patient felt herself so much recovered that she did not deem it worth while to attend the dispensary any longer.

The battery employed consisted of a combination of thirty-two Smee's elements of small size, twenty-four of which gave *as intense a current* as the patient could bear without discomfort. It may be stated that galvanization of the sympathetic was tried on one or two occasions, but was not continued for fear of complicating the treatment. No medicines of any kind were given.

Clinical observation of the effects of electric currents in morbid conditions is so often at variance with the results of electro-physiological experiment, that very little assistance is afforded us in any endeavor to explain the former by a knowledge of the phenomena of the latter. We must therefore be excused from attempting to explain the *rationale* of the treatment employed in the cases recorded above. One fact, however, seems to be

demonstrated, at least to the satisfaction of myself and of those who have witnessed the employment of electricity in cutaneous affections, and that is, that electrical currents, both primary and induced, possess in an eminent degree the power of modifying for the better certain morbid conditions of the integument. The problems yet to be determined are, what cutaneous affections are amenable to electrical treatment, and what *methods of application* are most likely to be followed by the desired results? It can hardly be expected that constant results will follow haphazard or purely empirical applications, and we conceive that the following, among other elements, must be taken into consideration, namely, the direction of the current employed, the position of the rheophores, the material of which they are composed, as affecting their conductibility, the length of application, and the dose as regards quantity and intensity. It is probable that the dose will be found to have an important influence in determining the result, and recent improvements in the mechanical construction of some of the batteries for both constant and induced currents, permit this to be measured with considerable accuracy. It is to be hoped that experimenters in this field, in announcing results, will record in full the procedures by which they have been obtained.—*Medical Gazette.*

On Elixirs Containing Iron. By W. W. Seay.

A considerable discussion has been carried on regarding the propriety of furnishing the various elixirs for the use of the profession and the public. My own experience has suggested a decided impression in their favor, and, while they can never take the place of similar officinal preparations, they can be made, with proper care, fully equal in medicinal effect, and certainly more agreeable to the taste. Whilst deprecating any fundamental change of our old time-honored and tried remedies, I think many of them could be improved in flavor and appearance, and do our art no discredit. I have known patients absolutely refuse to take many of our tonics long before their use should have been discontinued, simply on the ground of their nauseous, bitter taste. These elixirs are elegant in appearance, and have a decidedly pleasant flavor, which I think is a great consideration where medicines have to be taken for a length of time. As furnished us by large manufacturing firms, my observations are opposed to their usefulness, since in nearly every instance they lack the necessary strength. Certain salts of iron can be added to almost any of our

tinctures (modified somewhat in preparation) without precipitation, and prove as useful as before their addition. I propose furnishing a few recipes, the formulæ of which I have originated and found useful. I do not claim any great scientific achievement for them, but I do think they are preferable to any I have yet seen in use. They retain their *tannic acid and natural combinations apparently unchanged, at all events, without any great chemical disturbance.* It will be observed that alcohol of officinal dilute strength is taken, and the drugs exhausted by it, and *then* sugar is added, which *increases the bulk* without interfering with its *solvent action.* The general full dose being in most cases about one-half fluid ounce, the spirituous strength will amount to only one and one-third fluid drachms of officinal alcohol, which quantity cannot be considered very objectionable. Wines or brandies can be substituted for a portion of alcohol, if deemed advisable, account being taken of the difference of alcoholic strength, the object being to approach as nearly as possible to the menstruum ordered for similar officinal tinctures. Like all tinctures, they are directed to be taken in a little water. The subjoined preparation of Elixir Cinchonæ et Ferri Hypophosphitis, I can specially recommend as an elegant and beautiful one, having taken it myself for some time past, where phosphorus was indicated. About its permanence beyond a few weeks I cannot vouch, as I have not laid by any samples for a great length of time to test it. Hypophosphorous acid has a great affinity for oxygen, and how far the sugar will protect it in the presence of organic matter I am unable to state. I have kept it on hand without change for about two months. The solutions can be kept separately and mixed as wanted, and an elegant preparation insured.

Elixir Cinchonæ et Ferri Hypophosphitis.

Elixir Cinchonæ,	Oj.
Syr. Ferri Hypophosphitis,	f℥ij.
Alcoholis Fortior.,	f℥ss.
Ac. Hypophosphorosi,	f℥iv.

Mix the syrup, acid and alcohol together, and then add to elixir.

The Elixir Cinchonæ designated is that published by me in the June number Am. Journal of Pharmacy, 1871. The Syr. Hypophosphite Iron is that of W. S. Thompson, and the Hypophosphorous Acid that of Parrish, in Parrish's excellent "Treatise on Pharmacy."

The dose for an adult would be about one-half fluid ounce, containing thirteen grains red Peruvian bark, nearly one-half fluid drachm of the Syrup of the Ferrous Hypophosphite, six and one-half minims of ten per cent. hypophosphorous acid.

Elixir Gentianæ et Ferri Chloridi.

Gentian, in coarse powder, - - - - -	two troy ounces.
Recent Orange Peel, bruised, - - - - -	two troy ounces.
Cardamom Seed, powdered, - - - - -	one-half troy ounce.
Alcohol Dil, q. s.	

Percolate s. a. until twenty-one fluid ounces have been obtained. To this add and dissolve

Sacch. Alb. Pulv., - - - - - - -	thirty-one av. ounces.
Acid. Muriat. Pur., - - - - - - -	fʒij.
Sol. Ferri Chloridi (FeCl), - - - -	fʒiv.

The strength of the elixir is about the same as officinal tinctura gentianæ co.; it contains the equivalent of ten drops officinal tr. ferri chloridi to each fluid ounce.

Any elixir that may be desired with chloride of iron can be made in the same way, substituting other drugs instead of gentian. I will furnish my recipes with other salts of iron, for future numbers of the Journal, as I can find the time. I think if druggists will give these recipes a fair trial, they will find the resulting elixirs will give better results than any that have heretofore been published.—*Am. Jour. Pharmacy.*

Editorial.

The Massacre of the Innocents.

"A voice was heard in Rama, lamentation and great mourning: Rachel bewailing her children, and would not be comforted because they are not."

Perhaps no prophecy was ever uttered, by divine inspiration, of more universal applicability than the above. Significant at that day, in the mouth of Jeremiah, of the sacrifice of all in Judea of two years old and under, on the altar of political jealousy, it is not less so to-day of the continued slaughter of the same class upon the altar of human ignorance and stupidity.

This parallel will readily suggest itself to the mind of the thoughtful reader of the sanitary statistics of this and all other large cities, during the present season of the year.

A glance at the mortality reports of our accomplished Sanitary Superintendent from week to week, while showing the most

favorable results from the efforts at sanitary reform, will also demonstrate the undiminished ratio of infant mortality.

When, in 1867, epidemic cholera numbered among its victims fifteen hundred of our citizens, not only the whole city but the entire country was panic stricken, and, shrinking in terror from the fearful scourge, spared no pains, no expense, to devise and put into operation means for averting the danger. Science and capital co-operated heartily in the work of self-preservation, and to their united efforts we owe, in part at least, our present immunity from this danger.

When, on the other hand, in 1870, the reports of the registrar of vital statistics of Chicago show a mortality amongst children of nearly eight hundred from "cholera infantum" alone, and of about as many more classified under the various heads, diarrhœa, teething, convulsions, summer complaint, dysentery, etc., no fears are awakened, no special measures are concerted, no funds are contributed, to avert this plague; but, weeping apathetically over the graves of the slaughtered innocents, one and all execrate the "hot weather" or "the teeth," as if children could not live in an atmosphere above 90° Fahrenheit, or dentition was a necessarily fatal ordeal which was only exceptionally survived.

How thoroughly true it is that "familiarity breeds contempt." Accustomed yearly to see hundreds of children withering under this blight, it has come to be considered a matter of course, and the ordinary coincidences, heat and dentition, being assumed as the causes, no further effort is made to detect other and more direct agencies in the production of a pestilence whose only result is the death of a few children every summer. The magnitude of the evil is lost sight of in its continuous presence.

While it is doubtless true that a high atmospheric temperature is a factor, and an essential factor, in the production of cholera infantum, a correct appreciation of the subject will never be acquired without a thorough comprehension of concurrent causes. If solar heat be the sole cause of cholera infantum, then the elevation of temperature to a definite degree would be the signal for a universal epidemic, or if dentition were *the cause*, no child would escape while passing through this phase of its development.

Again, we hear it asserted confidently that the excessive infant

mortality from this cause is a result of exposure to foul exhalations from filthy streets, gutters, and alleys, and from the unwholesome atmosphere engendered in the crowded tenements of the poor, but, at the same time, the mortality lists show that cholera infantum is no respecter of localities, and, like its grim general, "pallida mors æquo pulsat pede pauperum tabernas regumque turris." (Hor.)

Since it is thus apparent that neither heat, dentition nor impure air can alone occasion the development of this disease in the infantile organism, and that of these heat is the only constant factor, it follows that some other constant factor or factors must exist, which concurrently with these, with the first invariably, with the other incidentally, operate to produce the diseased condition in question.

What, then, are these other constant factors? Are they susceptible of detection? One of them certainly is so, and that one is Starvation.

It may seem a bold assertion and a libel upon humanity to charge the mothers of our city and of our country with the horrible crime of infanticide, and yet we have no hesitation in asserting that hundreds of children, every year, are starved to death—starved in the midst of plenty—starved through the deplorable ignorance of their parents, and the criminal ignorance of even some physicians.

It would seem to be quite time to understand that the cavity of the stomach, so far as nutrition is concerned, is entirely outside of the organism, and that the filling of this cavity does not necessarily imply the feeding of the organism. Place within this receptacle matters insusceptible of solution in its secretions, and therefore of absorption by its vessels, and the organism is as certainly starved as by the total privation of food.

Now this condition is of daily occurrence within the experience of every physician, and this very frequency of occurrence renders excusable the denunciation of an evil which should be so apparent as to render its denunciation impertinent.

If strict inquiry be made into the history of every case of infantile intestinal disease, one constant antecedent will appear, viz., the ingestion of indigestible matter, and of these, in the vast

majority of cases, the offending substance will be found to be starch in some one of its various forms.

From the food provided by the hand of Omniscience for the human infant, this compound has been entirely excluded, which seems to be a sufficient indication of its unfitness for their nutrition; but man, ever seeking to be wiser than his Maker, striving to improve upon the plan of creation, substitutes for the mother's milk, first that of swill-fed cows, and, next, starch, bread, crackers, arrowroot, sago, rice, farina, and so on through the long category of infantile poisons, and succeeds in producing cholera-infantum, and raising the price of cemetery companies' stock.

If some of the medical gentlemen who are in the habit of prescribing, for their infantile patients, from the above dietary list, will take the trouble to examine the alvine evacuations of the little victims with a microscope, they will perceive, to their great astonishment, doubtless, the starch corpuscles unchanged therein, and will, perhaps, ask how is this? We answer, with Pandams, "he that would have a cake out of the wheat must tarry the grinding"; but a faute de moulin point de farine; and here lies the whole secret in a nutshell, wait for the grinding, wait for the grinders, and when they make their appearance then give farinaceous food, and not until then. Pursue this course, and its wisdom will be demonstrated by the diminished ratio of infant mortality, which will surely follow; continue to neglect it, continue to violate physiology, or, what is the same thing, the laws of nature, and we shall continue to see the mortality of our city rise to the appalling figures of last Saturday, viz., 1-60 of one per cent. per diem, *i. e.* at the rate of 6 per cent. per annum, which would reduce the average longevity to 16 years and 8 months.

W. H.

Cundurango.

From an analysis of this drug, by Dr. Antisell, of Washington, D. C., published in the July number of the *American Journal of Pharmacy*, its alleged therapeutic activity appears to rest upon a very slender foundation.

It is separable mechanically into wood and bark, in the proportion of 50.28 parts per cent. of the former and 49.72 parts of the latter. Of these, the bark is asserted to contain all the medicinal virtues residing in the plant.

Of this latter, 100 parts yielded of water 8 per cent., of mineral salts (ash) 12, and of vegetable substance 80 per cent.

The 80 per cent. of vegetable matter yielded 63.5 per cent. of cellulose, lignin, etc.; of tannin, yellow and brown coloring matters extractive, 12.6 per cent.; of gum and glucose from starch, .5 of 1 per cent.; of yellow resin, soluble in alcohol, 2.7 per cent.; and of fatty matters soluble in ether, and partially so in strong alcohol, .7 of 1 per cent. No crystalline alkaloid or active principle was detected.

The Doctor summarizes his conclusions thus—"Whatever medicinal virtues the plant may possess, must reside either in the yellow resin or the extractive; the former is soluble in alcohol, the latter in water; in the watery decoction, some of the resin is diffused, but the greater portion of the resin is not extracted by the water. The therapeutic position of the plant, judged from analysis, might be among the aromatic bitters."

We fear that the gentleman of this city who has ordered thirty pounds for experiment, will find that he has an elephant on his hands. W. H.

This is what a respectable medical paper says of the book castigated last February in this Journal by *Volta Reeke*, and over the review of which the hypocrites and noodles waxed virtuously bellicose:

"A Panel House Book.—The mania for sensational books seems at last to have affected medical writers also. Beginning with small volumes bearing an innocent question on the title page, we next had 'Frenchy' translations of French authors. And now the climax seems to have been reached in a work which has been sent us lately. We never met with a scribbler before who could write so perfectly de omnibus rebus et quibusdam aliis. As is always the case in such books, exceptional cases are dragged forth as being the rule; everything and everybody is, in the opinion of the writer, wrong, civilization is wrong, men are brutes, women are depraved, girls and boys are extremely wicked, and even little children, who generally are supposed to be mere angels without wings, are by him accused and condemned. The laws of logic seem to be entirely unknown to the writer, for he wages unceasing warfare against them, and he has perfectly succeeded in emancipating himself from them as well as from common sense. In the choice of his illustrations and examples

he has descended into the scums of society, and after gathering up all the filth possible, an unsavory mess is placed before us which smells rank to heaven, and which, introduced with long-winded apologies, he demands of us to accept, as a true representation of the present state of society. In order to catch the general reader, the whole work is infiltrated with moral sentences which spout forth as freely as the tears of the professional mendicant, and are as genuine as the protestations of innocence on the part of a convicted thief. The binding and printing is excellent, but if the very worst of material had been used, we would consider it too good for printing a book which is an outrage upon common decency and an insult to common sense. But the cloven foot cannot be concealed. While groaning over this wicked world, and shedding crocodile tears, the writer smacks his lips at, and rolls each separate piece of filth of this vile compound under his tongue as if it were a delicious morsel. The anonymous scribifax threatens to inflict another book upon society. We suggest, 1, a decent subject; 2, a decent title, and 3, a decent writer, who is not ashamed to publish his name on the title page."—*Physic and Pharmaceutist.*

Recent Deaths.

Prof. Geo. C. Blackman, M.D., Cincinnati.

E. M. Clark, M.D., Detroit.

Died, near Quincy, Ill., July 12th, 1871, of phthisis pulmonalis, Augustus E. Roux, æt. 25, student of Rush Medical College, Chicago, Ill., class of 1868–69.

"The Student's Chart of the Sympathetic Nerve," by RALPH M. TOWNSEND, M D., Assistant Demonstrator of Anatomy in the Jefferson Medical College.

This is a convenient eight-by-ten map, useful to the student for reference, and, costing only a few cents, it is accessible to all. It represents the pre-vertebral ganglia, with their connecting cords; the ganglion of Ribes, ganglion impar, the hypogastric, aortic, solar, cardiac, facial, carotid and cavernous plexuses; the cephalic ganglia, branches of communication between the ganglia, with the cerebral and spinal nerves, and branches of distribution to the viscera, etc. This gives one a very good general idea of the distribution and relations of the different parts of the sympathetic system. The sympathetic nerves are colored yellow; the motor, blue; and the sensory, red.

Charles C. Chatfield & Co., of New Haven, have in press the last two sermons preached by President Woolsey, before retiring from the Presidency of Yale. One of them is his farewell sermon delivered July 2. This was pronounced, by those who heard it, to be the best he ever preached. The other is his last baccalaureate, delivered July 9. They will be printed in elegant style and bound up in paper (60 cents), and in cloth ($1.00).

Errata.

Page 341, in prescription given, read gr. $\frac{1}{3}$ of the strychnia, instead of $\frac{1}{13}$. Please correct with a pen.

In the valuable article on Hypodermic Medication, published last month, on page 421, for "Austin" read *Anstie.* In line 6, page 433, for "inserted" read *inverted.* Be sure and correct this last with a pen, as otherwise accidents might possibly ensue.

It is impossible always to avoid these typographical errors, although we flatter ourselves that the JOURNAL is as free from them as any other periodical extant.

Loot.

Cundurango.

"Cundurango," which we had the honor of introducing to the notice of our readers a few weeks ago, is fairly started on its therapeutical travels under the patronage of the State Department, and for some time to come will furnish a theme for eulogistic admiration in daily newspapers, albeit its miraculous attributes have not, thus far, excited the enthusiasm of the medical press. We are, however, glad to announce that one contribution of a scientific character has been made to its history by Professor Antisell, to whom a specimen was forwarded for examination, the result of which is recorded in the *National Medical Journal.* The absence of root or leaves in the samples sent prevented the determination of the botanical relations of the plant, and the physical description is limited to the following particulars: The stem is "woody, shrubby, and covered by a greenish or ash-gray bark, the former tint being due to a coating of lichens on the surface." The woody fibre is straw-colored and brittle, very slight-

ly aromatic and bitter in taste. The bark is slightly corrugated, easily separable from the stem, having an aromatic, bitter flavor like that of cascarilla, and divisible into three layers; the inner consisting of reticular woody fibre, with starch granules and particles of resin; the middle of fibre and dotted ducts also containing resinous particles; and the outer of bark-cells containing tannic acid and coloring matters. The chemical analysis of the bark showed:—

Moisture,	8
Mineral salts,	12
Vegetable matters,	80
	100

Further examination reduced these vegetable matters to:—

Fatty matter, soluble in ether and partially in strong alcohol,	.7
Yellow resin, soluble in alcohol,	2.7
Starch, gum, and glucose,	.5
Tannin, yellow and brown coloring matter and extractive,	12.6
Cellulose, lignin, etc.,	63.5
	80.

No volatile oil or acid, no alkaloid or active principle, could be obtained. Dr. Antisell classes cundurango among the aromatic bitters, and thinks that whatever medicinal properties it may possess must reside either in the yellow resin or in the extractive, the former of which is soluble in alcohol, the latter in water.

Although, of course, all therapeutical questions must be practically settled by clinical rather than chemical tests, the above showing is not calculated to increase our faith in the triune specificity of cundurango for "cancers, ulcerous affections, and venereal diseases." So many cures for carcinoma have successively been extolled and failed—arsenical paste, acetic acid, gastric juice, carbolic acid, electrolysis, and a host of others—that we fear this dread malady must long remain an *opprobrium medicorum*. It is beyond question that, in some rare cases, spontaneous recovery from cancer occurs; but in such instances the treatment cannot be accepted as influencing the result, and we confess our very strong doubt whether a specific remedy will ever be discovered—if, indeed, there exist a specific for any disease whatsoever. —*Med. Gazette.*

Treatment of Hæmatemesis by Transfusion.

Dr. Carl Michel reports an interesting case of hæmatemesis in which transfusion was successfully employed. The patient was 63 years of age, robust, but had suffered for a few weeks previously from loss of appetite and some eructations. On the 15th of May he became listless and unable to do his work, and went to bed and took

a dose of salts, and for three or four days suffered from diarrhœa. The motions were black. He became very weak, cold sweats appearing on his face. On the 19th, M. Michel saw him. He was lying on his back, very debilitated and anæmic, with strong abdominal pulsation, and pain on the pressure of the abdomen. Whilst examining him the pupil contracted, several drops appeared on the forehead, and the whole body began to tremble. This lasted for a minute. On placing him upon a night stool, three black lumps, the size of a hen's egg, were passed, with a pint of clear blood. The patient then fainted. The diagnosis was then made as being either a rupture of a degenerated atheromatous artery or as chronic ulcer of the stomach. He was ordered ice internally and externally, acetate of lead and opium, and perfect rest. On the following day there was improvement, and in exchange for lead and opium, diluted sulphuric acid was ordered in small doses every two hours. On the 21st, vomiting of blood occurred, and all the symptoms became worse. Infusion of digitalis and nitrate of potash was ordered, and subsequently, as no improvement followed, tinct. ferri acetat. The diet was milk and cold beef tea. On the 22d, he was insensible for three-quarters of an hour, and all his symptoms betokened the near approach of death. Transfusion was determined upon, and performed on the 24th with a simple glass syringe, without the help of a skilled assistant. The blood was taken from the arm of the son, and received to the extent of four ounces into a vessel floating on warm water; here it was whipped and immediately injected into the cephalic vein, which had been previously laid bare and surrounded with a ligature, by which it was lifted out of its bed. The blood was slowly injected, care being taken that no air entered. No sensation of dyspnœa was experienced. During the injection, and after it, he said he felt easier. An hour afterwards he had a rigor, but no fainting or convulsions recurred. He was directed to continue the use of the iron, and to take cold broth with yolk of eggs. On the 26th, he was much better, but some tenesmus occurring, a starch clyster was ordered with six drops of tincture of opium, and from this time he steadily regained his health. Upon the whole it did not appear that more than 1½ oz. were really injected.—(*Berliner Klinische Wochenschrift*, No. 49, 1870.)—*Practitioner.*

Treatment of Sciatica.

Dr. J. Ernest Meiere, M.D., writes to the *Medical Record*:—The following treatment which I have adopted in three cases of sciatica of several years' standing, with the most gratifying results, I publish to the profession, believing by its strict observance we have the means of controlling and of eradicating this disease.

I shall give the history of its treatment in one case, it being the most severe.

Thomas Browning, aged 45, a farmer of Western Maryland, presented himself at my office for treatment, having for the eighteen months previous suffered from sciatica. The entire right lower limb was *atrophied*, and he said he could *span it at the largest part of the thigh with one hand.* He was entirely incapacitated from attending to the duties of his farm, and could barely "hobble" about with the aid of a stick. He was very much discouraged, having previously to my seeing him been under the treatment of several physicians "without much benefit." On my giving him assurance that I could benefit him, he placed himself under my care on the 4th of April, 1870, and continued under my treatment, at intervals, until July, when I saw him professionally for the last time. The treatment was as follows:

He was cupped along the course of the sciatic nerve to the ankle, taking about eight ounces of blood. He was then ordered:

℞ Ol. tiglii gtt. iii.
Fiat in pil. No. 3. Sig., one each night.

Should the pills operate too frequently, their action can be easily checked with tinct. opii.

The following mixture was then given him, which I am confident has a very great controlling influence on the disease.

* ℞ Quiniæ sulph. ℈iss. Vini colch. sem. f℥i.
Potassii iodidi, ℥ss. Aquæ dest. ℥vi.
Sig., teaspoonful three times daily.

The cupping was repeated on the 8th and 23d of the same month, taking about the same quantity of blood as at the first operation. The mixture was continued at intervals up to July, but I should advise that there be no interruption in its administration until the termination of the treatment.

The limb should be subjected to a cold water douche, morning and night, for five or ten minutes, for several months thereafter, and strict attention be paid to the bowels.

The New York Ear Dispensary.

A much-needed charity, whose object is indicated by its title, has been recently opened at No. 69 West 35th Street, near 6th Avenue. It was incorporated in April last, and is under the control of a board of twelve trustees, who have appointed as attending surgeons Drs. Geo. B. Pomeroy and Samuel Sexton.

The importance of the ear as a field of investigation is being generally recognized, and its study is taking rank with the other specialties of the day.

* To prevent flocculent solution, the quinine and iodide of potassa should be dissolved in different vessels, or else a precipitate of the insoluble iodide of quinine will be thrown down, and the medicine be of no effect.

Proceedings of Societies.

NORTH IOWA MEDICAL SOCIETY.

The North Iowa Medical Society held its 11th annual meeting at the office of Dr. Andros, McGregor, on Wednesday, June 7th.

Roll called, and found present — Drs. F. Andros, H. H. Clark, W. C. Lewis, J. S. Green, J. T. H. Scott, D. W. Chase, W. C. Earl and L. Brown, Jr.

Minutes of last meeting read and approved.

Drs. J. W. Curtis, of Decorah; A. B. Hanna, of Elkader; E. R. Zigler and S. E. Robinson, of West Union, were duly elected members of the Society.

Communications were received from Drs. N. H. Knowler, of Hesper, and Lewis L. Hazeltine, of New York City.

The following resolutions were adopted:

Whereas, in the conscientious discharge of duty, Dr. Lewis L. Hazeltine has removed from a sphere of usefulness which he has successfully exercised for the benefit of the public and honor of the profession; and

Whereas, from his first connection with this Society to its close, he was a faithful and efficient member; therefore,

Resolved, That we, the members of the North Iowa Medical Society, hereby express our regret at his loss, and unabated interest in his future welfare.

Resolved, That the Secretary be authorized to place his name upon the list of Honorary Members, and that a copy of our proceedings be at all times sent him.

The President, Dr. Andros, read his annual address, a well-written essay upon Anæsthetics, which brought out much discussion from several members; the discussion to be continued at the next meeting.

Dr. Curtis made a very lengthy report upon the value of the thermometer in the diagnosis and prognosis of disease.

Dr. H. H. Clark exhibited a fibrous tumor weighing three ounces, taken from the brain of a woman, who, although she had been sick for a long time, died so suddenly that foul play and poison were suspected.

There was a lengthy report upon the use and the effects of the hydrate f chloral. Dr. Brown had used it in two cases of puerperal convulsions, and one of partial insanity, caused by the poison of tobacco applied in the form of a poultice to a carbuncle; all three cases yielded promptly to it. Dr. Scott had used it in one, and Dr. Green in many cases of difficult labor, with the best success, causing sleep between pains, and relaxation, more than any other drug. Dr. Chase, of Elkader, reported a case, a patient of his, a physician who, upon his own responsibility, took over one ounce to a

dose without producing any deleterious effects, only thirty hours profound sleep.

Dr. Scott reported an interesting case of strangulated scrotal hernia in a young man whom he and Dr. Andros operated on, and found a large portion of the omentum mortified which they cut away, and ligated the stump, fastened one end of the ligature external to the wound; in a few days it became loose, and was drawn up into the abdomen. Several weeks after, an abscess appeared in the umbilical region, which discharged a few ounces of pus and the ligature. The patient then made a rapid recovery.

Many interesting cases were reported by different members, and opinions expressed.

The Constitution was changed so as to admit Howard county to the territory of the Society.

On motion of Dr. S. E. Robinson, the President was directed to appoint a Committee of one to report upon Surgery, Obstetrics, Practice, and new remedies, and one or two other subjects, to report at the next annual meeting.

The following officers were elected for the ensuing year:

W. C. Lewis, of Clermont, President; Luther Brown, Jr., Postville, Vice President; J. S. Green, Postville, Secretary; H. H. Clark, McGregor, Treasurer; Drs. J. S. Green, J. T. H. Scott and H. H. Clark, Censors.

Drs. F. Andros and J. W. Curtis, were appointed Delegates to the Amer. Med. Ass'n; and Drs. F. Andros, J. W. Curtis and H. H. Clark, Essayists.

The Secretary was authorized to make credentials to any member who would attend the State Medical Society.

Adjourned, to hold the next annual meeting at Postville, on the first Wednesday of June, 1872; also a semi-annual meeting at Decorah, on Wednesday, June 25, 1871.

All regular physicians in good standing are requested to attend.

J. S GREEN, *Secretary.*

DeWITT COUNTY MEDICAL SOCIETY.

The DeWitt County Medical Society met in annual session, at the office of Dr. C. Goodbrake, in Clinton, on Tuesday, the 2d day of May, A. D. 1871, the President, Dr. W. G. Cochran, in the chair.

Present—Drs. W. G. Cochran, J. H. Tyler, J. A. Edmiston, W. W. Adams, Z. H. Madden, B. S. Lewis, C. Goodbrake, J. Wright, and T. Kelley.

The minutes of the last regular meeting were read and approved.

The election of officers being in order, the following named gentlemen were elected for the ensuing year.

President—Dr. C. Goodbrake; Vice President—Dr. J. H. Tyler; Secretary

—Dr. Thomas Kelley; Treasurer—Dr. J. A. Edmiston; Censors—Drs. J. Wright, Z. H. Madden, and Wm. W. Adams.

Delegates to the State Medical Society, (which meets in Peoria, on the third Tuesday in May, 1871,) Drs. C. Goodbrake, Z. H. Madden, J. H. Tyler, and J. A. Edmiston.

On motion, the election of delegates to the American Medical Association was postponed until the regular meeting in January, 1872.

On motion, the Society adjourned, to meet again at one o'clock P. M.

AFTERNOON SESSION.

Society met pursuant to adjournment.

Present—Drs. C. Goodbrake, J. H. Tyler, T. K. Edmiston, J. A. Edmiston, B S. Lewis, J. Wright, W. G. Cochran, Z. H. Madden, T. W. Davis, J. H. Potter, N. Patterson, T. Kelley, and D W. Edmiston. Dr. Laughlin, of Bloomington, honorary member of this Society, was also present.

By the request of the retiring President, he was excused from delivering his valedictory address until the next regular meeting.

Dr. Wm. W. Adams read a very able essay on Typhoid Fever.

On motion of Dr. T. K. Edmiston, Dr. W. W. Adams was requested to furnish the Society a copy of his essay for publication in the *Chicago Medical Journal.*

Dr. D. W. Edmiston read a very interesting essay on Diseases of the Air Passages.

On motion, Drs. W. W. Adams and D. W. Edmiston were continued as essayists for the next regular meeting.

On motion, the chair appointed Drs. T. K. Edmiston, W. W. Adams and Thomas Kelley, a committee to draft resolutions, expressive of the sense of this Society in regard to the death of the late Dr. Harrison Noble, honorary member of this Society.

On motion of Dr. T. K. Edmiston, the President, Dr. C. Goodbrake, was added to the above committee.

On motion of Dr. W. G. Cochran, Dr. J. A. Edmiston was requested to furnish the Society an essay on Materia Medica and Pharmacy.

On motion, the Chair appointed Drs. Wm. G. Cochran, J. Wright, and T. Kelley, a committee to correspond with Medical Societies of the adjoining counties in regard to forming a District Medical Society.

Dr. Laughlin reported a case of General Paralysis of much interest to the Society.

On motion, Cholera Infantum was made the subject of discussion for the next regular meeting.

On motion, the Secretary was requested to furnish the editors of both of the Clinton papers, and the *Chicago Medical Journal*, with copies of the proceedings for publication.

On motion, the Society adjourned, to meet in Marion on the second Tuesday in July next.

THOMAS KELLEY, *Sec.*